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FILE LAST UPDATED: 19 Feb 2008  (20080219/ED)

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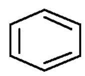
 substance identification.

=> d l98 bib abs hitstr retable tot

L98  ANSWER 1 OF 49  HCAPLUS  COPYRIGHT 2008 ACS on STN
AN   2007:174928  HCAPLUS  Full-text
DN   146:234107
TI   CVD growth of carbon nanotube on oxide micro-/
     nano-particles with curved surface
IN   Ganapathiraman, Ramanath; Agrawal, Saurabh
PA   Rensselaer Polytechnic Institute, USA
SO   U.S. Pat. Appl. Publ., 8pp., Cont.-in-part of U.S. Ser. No. 361,640.
     CODEN: USXXCO
DT   Patent
LA   English
FAN.CNT 2
     PATENT NO.          KIND   DATE       APPLICATION NO.        DATE
     ---------------     ----   --------   --------------------   --------
PI   US 2007035226        A1    20070215   US 2006-384524         20060321 <--
     US 2003165418        A1    20030904   US 2003-361640         20030211 <--
     US 7189430           B2    20070313
     US 2007218202        A1    20070920   US 2007-622610         20070112 <--
PRAI US 2002-356069P      P     20020211  <--
     US 2002-385393P      P     20020603  <--
     US 2003-361640       A2    20030211
     US 2005-663704P      P     20050321
AB    Hybrid structures include aligned carbon nanotube bundles grown on curved
      surfaces, such as micro- or nano -sized particles (such as silica
      microspheres) or bulk substrates having micro- or nano-sized protrusions.  The
      morphol. of the hybrid structures can controlled by varying the size and
      packing of the particles or protrusions.
IT   1330-20-7, Xylene, processes
     RL: PEP (Physical, engineering or chemical process); PROC
     (Process)
        (carbon source; CVD growth of carbon nanotube on
        oxide micro-/nano-particles with curved
```

surface)
RN 1330-20-7 HCAPLUS
CN Benzene, dimethyl- (CA INDEX NAME)



2 (D1— Me)

L98 ANSWER 2 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2004:913684 HCAPLUS Full-text
DN 142:96825
TI Method for synthesizing carbon nanotube by using plasma-enhanced chemical vapor deposition method
IN Lee, Cheol Jin; Yoo, Jae Eun
PA Iljinnanotech Inc., S. Korea
SO Repub. Korean Kongkae Taeho Kongbo, No pp. given
CODEN: KRXXA7
DT Patent
LA Korean
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	KR 2001049453	A	20010615	KR 2000-29583	20000531	<--
PRAI	KR 1999-30697	A	19990727	<--		

AB A method for preparing a carbon nanotube by using a plasma-enhanced chemical vapor deposition method is provided which mass-produces the carbon nanotubes vertically aligned on a base plate with high purity at low temperature and easily controls the diameter and the length of the carbon nanotube. The method comprises steps of: (1) forming a catalytic metal film on a base plate; (2) etching the catalytic metal film by using plasma generated from etching gas to form plural catalytic particles; and (3) synthesizing carbon nanotube on the catalytic particles by a plasma-enhanced chemical vapor deposition method with supplying carbon source gas to the plural catalytic particles formed base plate.

L98 ANSWER 3 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2004:913683 HCAPLUS Full-text
DN 142:96824
TI Method for synthesizing carbon nanotube by using low pressure chemical vapor deposition method
IN Lee, Cheol Jin; Yoo, Jae Eun
PA Iljinnanotech Inc., S. Korea
SO Repub. Korean Kongkae Taeho Kongbo, No pp. given
CODEN: KRXXA7
DT Patent
LA Korean
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	KR 2001049398	A	20010615	KR 2000-28005	20000524	<--
PRAI	KR 1999-30696	A	19990727	<--		

AB A method for preparing a carbon nanotube by using a low pressure chemical vapor deposition method is provided which mass-produces the carbon nanotubes vertically aligned on a base plate with high purity and easily controls the diameter and the length of the carbon nanotube. The method comprises steps of: (1) forming a catalytic metal film on a base plate; (2) etching the catalytic metal film with etching gas to form plural catalyst particles; and (3) synthesizing carbon nanotube on the catalytic particles by a low pressure chemical vapor deposition method with supplying carbon source gas to the plural catalytic particles formed base plate.

L98 ANSWER 4 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2004:428865 HCAPLUS Full-text
DN 140:409180
TI Production of carbon nanotubes and/or nanofibers
IN Kinloch, Ian; Singh, Charanjeet; Shaffer, Milo Sebastian Peter; Koziol, Krzysztof K. K.; Windle, Alan H.
PA Cambridge University Technical Services Limited, UK
SO PCT Int. Appl., 28 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

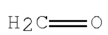
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	WO 2004043858	A1	20040527	WO 2003-GB4925	20031113	<--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW					
	RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG					
	CA 2504214	A1	20040527	CA 2003-2504214	20031113	<--
	AU 2003283573	A1	20040603	AU 2003-283573	20031113	<--
	EP 1560790	A1	20050810	EP 2003-775549	20031113	<--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK					
	JP 2006506304	T	20060223	JP 2004-550831	20031113	<--
	US 2006133982	A1	20060622	US 2005-534900	20051007	<--
PRAI	GB 2002-26590	A	20021114	<--		
	WO 2003-GB4925	W	20031113			

AB Aligned carbon nanotubes and/or nanofibers are produced by CVD by contacting a carbon-containing gas with prefinely divided substrate particles having substantially smooth faces with radii of curvature of > 1 μm and of length and breadth between 1 μm and 5 mm and having a catalyst material on their surface at 650-1250°. The substrate particles are made of silica, alumina, graphite, mica, magnesium oxide, calcium oxide, sodium chloride, aluminum, titanium, or aluminosilicate. The substrate is freshly prepared by colloidal processing, spray-drying, hydrothermal processing, or ball-milling. The catalyst can be iron, cobalt, molybdenum, nickel and can be prepared by decomposition of a precursor, especially ferrocene, nickelocene, cobaltocene, iron pentacarbonyl, or nickel tetracarbonyl. The carbon-containing gas can be CO, benzene, toluene, xylene, cumene, ethylbenzene, naphthalene, phenanthrene, anthracene, methane, ethane, propane, hexane, ethylene, propylene, acetylene, formaldehyde, acetaldehyde, acetone, methanol, ethanol or their mixts. A

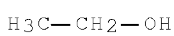
boron and/or nitrogen-containing compound can be added to the carbon-containing gas. A promoter, such as thiophene, can be added to the carbon-containing gas .

IT 50-00-0, Formaldehyde, reactions 64-17-5, Ethanol, reactions 67-56-1, Methanol, reactions 67-64-1, Acetone, reactions 71-43-2, Benzene, reactions 74-82-8 , Methane, reactions 74-84-0, Ethane, reactions 74-85-1 , Ethylene, reactions 74-86-2, Acetylene, reactions 74-98-6, Propane, reactions 75-07-0, Acetaldehyde, reactions 85-01-8, Phenanthrene, reactions 91-20-3, Naphthalene, reactions 98-82-8, Cumene 100-41-4, Ethylbenzene, reactions 108-88-3, Toluene, reactions 110-54-3, Hexane, reactions 115-07-1, Propylene, reactions 120-12-7, Anthracene, reactions 630-08-0, Carbon monoxide, reactions 1330-20-7, Xylene, reactions
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(production of carbon nanotubes and/or nanofibers)

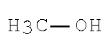
RN 50-00-0 HCAPLUS
CN Formaldehyde (CA INDEX NAME)



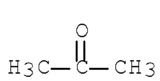
RN 64-17-5 HCAPLUS
CN Ethanol (CA INDEX NAME)



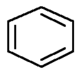
RN 67-56-1 HCAPLUS
CN Methanol (CA INDEX NAME)



RN 67-64-1 HCAPLUS
CN 2-Propanone (CA INDEX NAME)



RN 71-43-2 HCAPLUS
CN Benzene (CA INDEX NAME)



RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

RN 74-84-0 HCAPLUS
CN Ethane (CA INDEX NAME)

$H_3C—CH_3$

RN 74-85-1 HCAPLUS
CN Ethene (CA INDEX NAME)

$H_2C=CH_2$

RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

$HC≡CH$

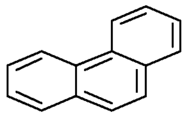
RN 74-98-6 HCAPLUS
CN Propane (CA INDEX NAME)

$H_3C—CH_2—CH_3$

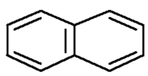
RN 75-07-0 HCAPLUS
CN Acetaldehyde (CA INDEX NAME)

$H_3C—CH=O$

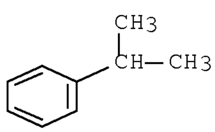
RN 85-01-8 HCAPLUS
CN Phenanthrene (CA INDEX NAME)



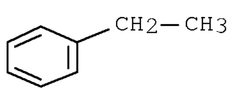
RN 91-20-3 HCAPLUS
CN Naphthalene (CA INDEX NAME)



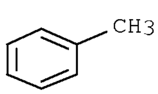
RN 98-82-8 HCAPLUS
CN Benzene, (1-methylethyl)- (CA INDEX NAME)



RN 100-41-4 HCAPLUS
CN Benzene, ethyl- (CA INDEX NAME)



RN 108-88-3 HCAPLUS
CN Benzene, methyl- (CA INDEX NAME)



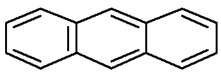
RN 110-54-3 HCAPLUS
CN Hexane (CA INDEX NAME)

Me—$(CH_2)_4$—Me

RN 115-07-1 HCAPLUS
CN 1-Propene (CA INDEX NAME)

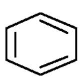
$H_3C—CH=CH_2$

RN 120-12-7 HCAPLUS
CN Anthracene (CA INDEX NAME)



RN 630-08-0 HCAPLUS
CN Carbon monoxide (CA INDEX NAME)

RN 1330-20-7 HCAPLUS
CN Benzene, dimethyl- (CA INDEX NAME)



2 (D1— Me)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Huang, S	1999	103	4223	JOURNAL OF PHYSICAL	HCAPLUS
Liang, Q	2001	36	471	MATERIALS RESEARCH B	
Singh, C	2003	372	860	CHEMICAL PHYSICS LET	
Singh, C	2002	106	10915	JOURNAL OF PHYSICAL	HCAPLUS
Smalley, R	2000			WO 0017102 A	HCAPLUS
Terrones, M	1999	11	655	ADVANCED MATERIALS	HCAPLUS
The Board Of Trustees O	2000			WO 0030141 A	HCAPLUS

L98 ANSWER 5 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2004:342473 HCAPLUS Full-text
DN 142:208850
TI Low temperature growth of vertically aligned carbon nanofibers in a low frequency inductively coupled plasma reactor
AU Xu, S.; Tskadze, Z.; Long, J. D.; Ostrikov, K.; Jiang, N.
CS Plasma Sources and Applications Centre, NIE, Nanyang Technological University, Singapore, 637616, Singapore
SO COMMAD 2002 Proceedings, Conference on Optoelectronic and Microelectronic

Materials and Devices, Sydney, Australia, Dec. 11-13, 2002 (2002
), 177-180. Editor(s): Gal, Michael. Publisher: Institute of Electrical
and Electronics Engineers, New York, N. Y.
CODEN: 69FHSX; ISBN: 0-7803-7571-8

DT Conference

LA English

AB Large area, highly uniform, vertically aligned C nanofibers (VACNF) were grown between 250-450° using a high d., low frequency, inductively coupled plasma source in an Ar/H2/CH4 discharge. The dynamic growth process was monitored using an in-situ, high resolution optical emission spectroscope. The growth of VACNFs is carried out on lightly doped Si (100) substrates, which were predeposited with nanometer layered Ni/Fe/Mn catalysts . The morphol., crystalline structure and chemical states of the VACNFs have a strong dependence on the growth conditions, in particular on the applied substrate bias and pretreatment of the catalysts. The field emission SEM shows that the CNFs grown with externally applied bias are well aligned and orthogonal to the surface of the substrate. The XRD and Raman spectroscopy analyses suggest that the C nanofibers are well graphitized. The growth temperature and externally applied bias play a vital role in the transition from C nanoparticles to vertically aligned nanofibers . This low temperature and large area growth process offer a great opportunity for the realization of VACNF-based devices.

IT 74-82-8, Methane, processes
RL: CPS (Chemical process); NUU (Other use, unclassified);
PEP (Physical, engineering or chemical process); PROC (Process);
USES (Uses)
(precursor; low temperature growth of vertically aligned carbon nanofibers in low frequency inductively coupled plasma reactor)

RN 74-82-8 HCAPLUS

CN Methane (CA INDEX NAME)

CH_4

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Boskovic, B	2002	1	165	Nature Mat	HCAPLUS
Bower, C	2000	77	2767	Appl Phys Lett	HCAPLUS
Dean, K	1999	85	3832	J Appl Phys	HCAPLUS
Iijima, S	1991	354	56	Nature	HCAPLUS
Jiag, K	2002	419	801	Nature	
Merkulov, I	2001	79	2970	Appl Phys Lett	
Qin, L	1997	30	311	Mater Lett	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Xu, S	2001	8	2549	Phys Plasmas	HCAPLUS

L98 ANSWER 6 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2004:230560 HCAPLUS Full-text

DN 140:239557

TI The growth of aligned carbon nanotubes on FeNiCo catalyst films

AU Ho, G. W.; Wee, A. T. S.; Lin, J.; Liu, R.

CS Department of Physics, National University of Singapore, Singapore, 119260, Singapore

SO International Journal of Nanoscience (2002), 1(1), 79-85
CODEN: IJNNAJ; ISSN: 0219-581X

PB World Scientific Publishing Co. Pte. Ltd.
DT Journal
LA English
AB Aligned multi-wall nanotubes (MWNT) were grown using hot filament plasma enhanced chemical vapor deposition (HF-PECVD) on a variety of substrates. The growth kinetics of carbon nanotubes is found to be governed by the morphol. of the metal film, the precursor gas composition as well as the temperature of the hot filament. Nanosized grain particles formed on FeNiCo films are optimum for carbon nanotube growth, since it is known that the substrate morphol. has a direct influence on the growth of carbon nanotubes . The aligned MWNT and graphite films were also studied using SIMS and UPS. Bi-directional growth, namely the root and tip growth, takes place during the preparation of the carbon nanotubes using HF-PECVD.
IT 74-86-2, Acetylene, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(growth of aligned carbon nanotubes on FeNiCo catalyst films)
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Chen, P	1999	82	2548	Phys Rev Lett	HCAPLUS
Chen, P	1999	285	91	Science	HCAPLUS
Collins, P	1997	55	9391	Phys Rev B	HCAPLUS
Dean, K	1999	85	3832	J Appl Phys	HCAPLUS
Doyle, J	1997	82	4763	J Appl Phys	HCAPLUS
Hamada, N	1992	68	1579	Phys Rev Lett	HCAPLUS
Ho, G	2001	79	260	Appl Phys Lett	HCAPLUS
Ho, G	2001	388	73	Thin Solid Films	HCAPLUS
Iijima, S	1991	354	56	Nature	HCAPLUS
Liu, C	1999	286	1127	Science	HCAPLUS
Maiti, A	1997	55	6097	Phys Rev B	
Mintmire, J	1992	68	631	Phys Rev Lett	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Rodriguez, N	1993	8	3233	J Mater Res	HCAPLUS
Salvetat, J	1999	82	944	Phys Rev Lett	HCAPLUS
Wagner, R	1964	4	8	Appl Phys Lett	
Yakobson, B	1996	76	2511	Phys Rev Lett	HCAPLUS

L98 ANSWER 7 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2004:60407 HCAPLUS Full-text
DN 140:96276
TI Synthesis of carbon nanotubes by chemical vapor deposition
IN Shaffer, Milo Sebastian Peter; Windle, Alan H.; Johnson, Brian F. G.; Geng, Junfeng; Shephard, Douglas; Singh, Charanjeet
PA Cambridge University Technical Services Limited, UK
SO PCT Int. Appl., 30 pp.
CODEN: PIXXD2
DT Patent

LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	WO 2004007362	A1	20040122	WO 2003-GB3086	20030716	<--
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	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG					
	AU 2003254465	A1	20040202	AU 2003-254465	20030716	<--
	EP 1558524	A1	20050803	EP 2003-764020	20030716	<--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK					
	JP 2005532976	T	20051104	JP 2004-520895	20030716	<--
	US 2006104884	A1	20060518	US 2005-521356	20050808	<--
PRAI	GB 2002-16654	A	20020717	<--		
	WO 2003-GB3086	W	20030716			

AB Carbon nanoparticles are produced continuously by fluidizing substrate particles with a flow of a gaseous carbon source, decomposing a transition metal compound on the substrate by heating to 600-1000°, and forming carbon nanotubes by decomposition of the carbon source catalyzed by the formed transition metal. The transition metal compound can be a transition metal formate, oxalate, or carbonyl containing Ni, Fe, and/or Co. The gaseous carbon source is carbon monoxide, or a hydrocarbon, such as methane or acetylene. The gaseous carbon source is mixed with a diluent, especially argon. The substrate particles can be silica, alumina, CaSiOx, calcia or magnesia. The nanotubes produced are single-walled carbon nanotubes.

IT 74-82-8, Methane, reactions 74-86-2, Acetylene, reactions 630-08-0, Carbon monoxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(synthesis of carbon nanotubes by chemical vapor deposition)

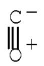
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

HC≡CH

RN 630-08-0 HCAPLUS
CN Carbon monoxide (CA INDEX NAME)



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Hafner, J	1998	296	195	CHEMICAL PHYSICS LET	
Harwell, J	2001			US 6333016 B1	HCAPLUS
Infineon Technologies A	2002			DE 10043891 A	HCAPLUS
Ivanov, V	1995	33	1727	CARBON	HCAPLUS
Kreupl, F	2001		231	ELECTRONIC PROPERTIE	
Rohmund, F	2000	328	369	CHEMICAL PHYSICS LET	

L98 ANSWER 8 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2004:60406 HCAPLUS Full-text
DN 140:79228
TI Synthesis of carbon nanomaterials
IN Shaffer, Milo Sebastian Peter; Windle, Alan H.; Kinloch, Ian; Cash, Stephen
PA Cambridge University Technical Services Limited, UK
SO PCT Int. Appl., 20 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004007361	A2	20040122	WO 2003-GB3115	20030716 <--
	WO 2004007361	A3	20040401		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

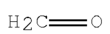
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	AU 2003280968	A1	20040202	AU 2003-280968	20030716 <--
PRAI	GB 2002-16531	A	20020716 <--		
	WO 2003-GB3115	W	20030716		

AB Carbon nanomaterials are made by preparing a solution of a catalyst or a catalyst precursor in a supercrit. fluid, or of a supercrit. fluid in a catalyst catalyzing the formation of carbon nanomaterials from a carbon source or a catalyst precursor, expanding the solution to produce particles of catalyst or catalyst precursor; and heating the catalyst or catalyst precursor particles with a carbon source in a furnace to produce carbon nanomaterials. The carbon source can be CO, benzene, toluene, xylene, cumene, ethylbenzene, naphthalene, phenanthrene, anthracene, methane, ethane, propane, butane, pentane, hexane, cyclohexane, ethylene, propylene, acetylene, formaldehyde, acetaldehyde, acetone, methanol, or ethanol. The catalyst can be manufactured in-situ from a transition metal catalyst precursor which can contain Cu, Cr, Mo, W, Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, or a metal from the lanthanide or actinide series. The transition metal catalyst precursor can have Me, cyclohexyl, carbonyl, cyclopentadienyl, cyclooctadiene, ethylene, or benzene ligands. The supercrit. fluid can be CO, benzene, toluene, xylene, cumene,

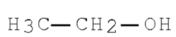
ethylbenzene, naphthalene, phenanthrene, anthracene, methane, ethane, propane, butane, pentane, hexane, cyclohexane, ethylene, propylene, acetylene, formaldehyde, acetaldehyde, acetone, methanol, ethanol, or preferably CO2. The solution is irradiated with UV light immediately before its expansion. The solution can contain a finely divided substrate material, such as fumed silica or polyhedral oligomeric silsesquioxanes (POSS).

IT 50-00-0, Formaldehyde, reactions 64-17-5, Ethanol, reactions 67-56-1, Methanol, reactions 67-64-1, Acetone, reactions 71-43-2, Benzene, reactions 74-82-8, Methane, reactions 74-84-0, Ethane, reactions 74-85-1, Ethylene, reactions 74-86-2, Acetylene, reactions 74-98-6, Propane, reactions 75-07-0, Acetaldehyde, reactions 85-01-8, Phenanthrene, reactions 91-20-3, Naphthalene, reactions 98-82-8, Cumene 100-41-4, Ethylbenzene, reactions 108-88-3, Toluene, reactions 110-54-3, Hexane, reactions 115-07-1, Propylene, reactions 120-12-7, Anthracene, reactions 630-08-0, Carbon monoxide, reactions 1330-20-7, Xylene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(synthesis of carbon nanomaterials)

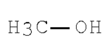
RN 50-00-0 HCAPLUS
CN Formaldehyde (CA INDEX NAME)



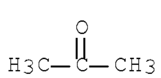
RN 64-17-5 HCAPLUS
CN Ethanol (CA INDEX NAME)



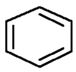
RN 67-56-1 HCAPLUS
CN Methanol (CA INDEX NAME)



RN 67-64-1 HCAPLUS
CN 2-Propanone (CA INDEX NAME)



RN 71-43-2 HCAPLUS
CN Benzene (CA INDEX NAME)



RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

RN 74-84-0 HCAPLUS
CN Ethane (CA INDEX NAME)

$H_3C—CH_3$

RN 74-85-1 HCAPLUS
CN Ethene (CA INDEX NAME)

$H_2C═CH_2$

RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

$HC≡CH$

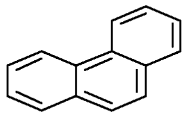
RN 74-98-6 HCAPLUS
CN Propane (CA INDEX NAME)

$H_3C—CH_2—CH_3$

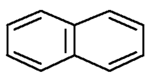
RN 75-07-0 HCAPLUS
CN Acetaldehyde (CA INDEX NAME)

$H_3C—CH═O$

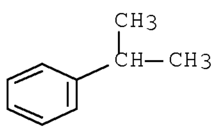
RN 85-01-8 HCAPLUS
CN Phenanthrene (CA INDEX NAME)



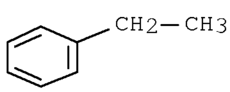
RN 91-20-3 HCAPLUS
CN Naphthalene (CA INDEX NAME)



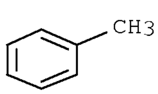
RN 98-82-8 HCAPLUS
CN Benzene, (1-methylethyl)- (CA INDEX NAME)



RN 100-41-4 HCAPLUS
CN Benzene, ethyl- (CA INDEX NAME)



RN 108-88-3 HCAPLUS
CN Benzene, methyl- (CA INDEX NAME)



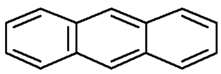
RN 110-54-3 HCAPLUS
CN Hexane (CA INDEX NAME)

Me—$(CH_2)_4$—Me

RN 115-07-1 HCAPLUS
CN 1-Propene (CA INDEX NAME)

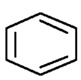
$H_3C-CH=CH_2$

RN 120-12-7 HCAPLUS
CN Anthracene (CA INDEX NAME)



RN 630-08-0 HCAPLUS
CN Carbon monoxide (CA INDEX NAME)

RN 1330-20-7 HCAPLUS
CN Benzene, dimethyl- (CA INDEX NAME)



2 (D1— Me)

L98 ANSWER 9 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2003:892223 HCAPLUS Full-text
DN 139:352259
TI Aligned carbon nanotube films on porous carriers and a process for producing them
IN Someya, Masao; Fujii, Takashi
PA Mitsubishi Gas Chemical Company, Inc., Japan
SO U.S. Pat. Appl. Publ., 12 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003211029	A1	20031113	US 2003-393364	20030321 <--
	JP 2004002182	A	20040108	JP 2003-120697	20030320 <--
PRAI	JP 2002-83044	A	20020325 <--		

AB Fine catalyst particles are loaded on a sol-gel method porous carrier having fine pores of 0.1-50 nm and a carbon compound is decomposed to form a carbon nanotube film on the carrier that is aligned perpendicular to the carrier

surface. The starting sol to be processed by a sol-gel method is a dispersion of fine alumina particles, fine aluminum hydroxide particles, fine silica particles or mixts. thereof. Alternatively, the starting sol may be an aluminum alkoxide, an alkoxysilane, a mixture thereof or a solution of an aluminum alkoxide, an alkoxysilane or a mixture thereof. If desired, a flammable or a thermally decomposable organic compound may be added as a microporous template.

IT 64-17-5, Ethanol, reactions 115-07-1, Propylene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(aligned carbon nanotube films on porous carriers and a process for producing them)

RN 64-17-5 HCAPLUS
CN Ethanol (CA INDEX NAME)

H_3C-CH_2-OH

RN 115-07-1 HCAPLUS
CN 1-Propene (CA INDEX NAME)

$H_3C-CH=CH_2$

L98 ANSWER 10 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2003:683536 HCAPLUS Full-text
DN 139:372935
TI Controlled growth of vertically aligned carbon nanofibers for applications in nanoscale devices
AU Melechko, A. V.; Merkulov, V. I.; Guillorn, M. A.; Zhang, L. A.; Hensley, D. K.; McKnight, T. M.; Subich, T. R.; Lowndes, D. H.; Simpson, M. L.
CS Oak Ridge National Laboratory, Oak Ridge, TN, 37831, USA
SO Proceedings - Electrochemical Society (2002), 2002-12(Fullerenes--Volume 12: The Exciting World of Nanocages and Nanotubes), 466-480
CODEN: PESODO; ISSN: 0161-6374
PB Electrochemical Society
DT Journal
LA English
AB We report on various aspects of the catalytic growth of vertically aligned carbon nanofibers (VACNFs) by d.c. plasma enhanced chemical vapor deposition (PECVD) that are important for nanoscale device applications. To integrate the VACNFs as functional elements into nanoscale devices their properties, such as height, diameter, sharpness, shape, alignment, chemical composition etc., have to be reproducibly controlled. The process development involves study of the multidimensional parameter space of the PECVD process (temperature, gas mixture, total gas flow, pressure, plasma current and voltage, growth time), as well as the dependence of the results on the substrate and catalyst material, catalyst thickness and lithog. defined pattern, and more subtle but important factors. Some of the issues that are important for the growth on the wafer scale and integration with the other microfabrication processes are also discussed.

IT 74-86-2, Acetylene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(controlled growth of vertically aligned carbon

nanofibers for applications in nanoscale devices)
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Alstrup, I	1988	109	241	Journal of Catalysis	HCAPLUS
Baker, R	1989	27	315	Carbon	HCAPLUS
Baylor, L	2002	91	4602	Journal of Applied P	HCAPLUS
Bower, C	2000	77	2767	Applied Physics Lett	HCAPLUS
Chhowala, M	2001	90	5308	J Appl Phys	
Cui, H	2000	88	6072	Journal of Applied P	HCAPLUS
Guillorn, M	2001	79	3506	Applied Physics Lett	HCAPLUS
Guillorn, M	2002	91	3824	Journal of Applied P	HCAPLUS
Guillorn, M	2001	19	573	Journal of Vacuum Sc	HCAPLUS
Lee, C	2000	77	3397	Applied Physics Lett	HCAPLUS
Melechko, A	2002	356	527	Chemical Physics Let	HCAPLUS
Merkulov, V	2000	76	3555	Applied Physics Lett	HCAPLUS
Merkulov, V	2001	79	1178	Applied Physics Lett	HCAPLUS
Merkulov, V	2001	79	2970	Applied Physics Lett	HCAPLUS
Merkulov, V	2002	80	476	Applied Physics Lett	HCAPLUS
Merkulov, V	2001	350	381	Chemical Physics Let	HCAPLUS
Ren, Z	1999	75	1086	Applied Physics Lett	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Zhang, L	2002			in press Appl Phys L	

L98 ANSWER 11 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2003:656961 HCAPLUS Full-text
DN 139:188673
TI Directed assembly of highly-organized carbon nanotube architectures
IN Ajayan, Pulickel M.; Ganapathiraman, Ramanath; Wei, Bingqing; Cao, Anyuan; Jung, Yung Joon
PA Rensselaer Polytechnic Institute, USA
SO PCT Int. Appl., 53 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	WO 2003069019	A1	20030821	WO 2003-US4032	20030211	<--

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

CA 2475790	A1	20030821	CA 2003-2475790	20030211	<--

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     AU 2003210961        A1    20030904   AU 2003-210961         20030211 <--
     EP 1483427           A1    20041208   EP 2003-739731         20030211 <--
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK
     JP 2005517537        T     20050616   JP 2003-568124         20030211 <--
PRAI US 2002-356069P      P     20020211  <--
     US 2002-385393P      P     20020603  <--
     WO 2003-US4032       W     20030211
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AB A method controllably aligning C nanotubes to a template structure to fabricate a variety of C nanotube containing structures and devices having desired characteristics is provided. The method allows simultaneous, selective growth of both vertically and horizontally controllably aligned nanotubes on the template structure but not on a substrate in a single process step.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Brown	2002			US 6340822 B1	HCAPLUS
Chuang	2000			US 6062931 A	HCAPLUS
Dai	1999	103	11246	J Phys Chem B	HCAPLUS
Han	2001			US 20010004979 A1	HCAPLUS
Jin	2001			US 6283812 B1	HCAPLUS
Zhang	2000	77	3764	Applied Physics Lett	HCAPLUS

L98 ANSWER 12 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2003:591110 HCAPLUS Full-text

DN 139:135544

TI Plasma synthesis of hollow nanostructures

IN Shaffer, Milo; Kinloch, Ian; Cash, Stephen; Mckinnon, Ian

PA Cambridge University Technical Services Limited, UK

SO PCT Int. Appl., 23 pp.
CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

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     PATENT NO.          KIND   DATE       APPLICATION NO.        DATE
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PI   WO 2003062146        A1    20030731   WO 2003-GB249          20030124 <--
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             GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
             LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
             PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ,
             UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
        RW:  GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
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             FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF,
             BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
     EP 1513767           A1    20050316   EP 2003-700924         20030124 <--
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK
     JP 2005515146        T     20050526   JP 2003-562034         20030124 <--
     US 2005118090        A1    20050602   US 2005-502320         20050124 <--
PRAI GB 2002-1600         A     20020124  <--
     WO 2003-GB249        W     20030124
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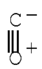
AB A method is described for the continuous production of nanotubes comprising forming a plasma jet, introducing into the plasma jet a metal catalyst or metal catalyst precursor to produce vaporized catalyst metal, directing one or

more streams of quenching gas into the plasma to quench the plasma and. Passing the resulting gaseous mixture through a furnace, one or more nanotube forming materials being added whereby nanotubes are formed therefrom under the influence of the metal catalyst and are grown to a desired length during passage through the furnace, and collecting the nanotubes so formed.

IT 630-08-0, Carbon monoxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(plasma synthesis of hollow nanostructures)

RN 630-08-0 HCAPLUS

CN Carbon monoxide (CA INDEX NAME)



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Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Nec Corp	1997			JP 09188509 A	HCAPLUS
Shimizu, Y	1999	75	929	APPLIED PHYSICS LETT	HCAPLUS
Smiljanic, O	2002	356	189	CHEMICAL PHYSICS LET	HCAPLUS
Univ Cambridge Tech	2002			WO 02092506 A	HCAPLUS

L98 ANSWER 13 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2003:16761 HCAPLUS Full-text

DN 139:158831

TI Synthesis of well-aligned carbon nanotubes on MCM-41

AU Chen, Wei; Zhang, Ai Min; Yan, Xuewu; Han, Dongcheng

CS Department of Chemistry, Nanjing University, Nanjing, 210093, Peop. Rep. China

SO Studies in Surface Science and Catalysis (2002), 142B(Impact of Zeolites and Other Porous Materials on the New Technologies at the Beginning of the New Millennium), 1237-1244
CODEN: SSCTDM; ISSN: 0167-2991

PB Elsevier Science B.V.

DT Journal

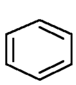
LA English

AB Well-Aligned carbon nanotubes (CNTs) were fabricated on mesoporous mol. sieves (MCM-41) embedded with iron oxide nanoparticles by CVD. Benzene with 1% thiophene was used as the carbon source. Large pore size MCM-41 was obtained by using 1,3,5-trimethylbenzene (TMB) as swelling agent. The mesoporous MCM-41 is an ideal substrate for growing well-aligned carbon nanotubes.

IT 71-43-2, Benzene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of well-aligned carbon nanotubes from benzene using iron oxide containing MCM-41 catalyst)

RN 71-43-2 HCAPLUS

CN Benzene (CA INDEX NAME)



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Abe, T	1995		1617	J Chem Soc Chem Comm	HCAPLUS
Beck, J	1991			US 505757296	
Beck, J	1992	114	10834	J Am Chem Soc	HCAPLUS
Blin, J	2000	16	4229	Langmuir	HCAPLUS
Branton, P	1997	IV	668	Charact Porous Solid	
Corma, A	1997	97	2373	Chem Rev	HCAPLUS
De Heer	1997	9	87	Adv Mater	HCAPLUS
De Heer, W	1995	268	845	Science	HCAPLUS
Flahaut, E	1999	300	236	Chem Phys Lett	HCAPLUS
Frank, S	1998	280	1744	Science	HCAPLUS
Hanfer, J	2001	77	73	Progress in Biophysi	
Huang, S	1999	9	1221	J Mater Chem	HCAPLUS
Huo, Q	1996	8	1147	Chem Mater	HCAPLUS
Kong, J	1998	292	4	Chem Phys Lett	
Kresge, C	1992	359	710	Nature	HCAPLUS
Kunieda, H	1998	102	831	J Phys Chem B	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Michael, F	1999	274	1701	Chem Mater	
Ren, Z	1998	282	1105	science	HCAPLUS
Sayari, A	1995			209th National Meeti	
Sayari, A	1997	9	2499	Chem Mater	HCAPLUS
Suh, J	1999	75	2047	Applied Physics Lett	HCAPLUS
Zhao, D	1995	279	548	Science	

L98 ANSWER 14 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:888664 HCAPLUS Full-text
DN 137:386679
TI Synthesis of nanoscale carbon materials by controlled thermal decomposition of and carbon deposition from organic compounds and transition metal catalysts
IN Shaffer, Milo
PA Cambridge University Technical Services Limited, UK
SO PCT Int. Appl., 31 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	WO 2002092506	A1	20021121	WO 2002-GB2239	20020514	<--

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
AU 2002257922	A1	20021125	AU 2002-257922	20020514	<--
EP 1390294	A1	20040225	EP 2002-727725	20020514	<--
EP 1390294	B1	20061018			

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
JP 2004525853	T	20040826	JP 2002-589398	20020514	<--
JP 3930810	B2	20070613			

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     AT 342874            T      20061115   AT 2002-727725          20020514 <--
     US 2004234444        A1     20041125   US 2004-477831          20040423 <--
     US 7135159           B2     20061114
PRAI GB 2001-11875        A      20010515  <--
     WO 2002-GB2239       W      20020514  <--
```

AB Preparation of nanoscale carbon materials is carried out by: (1) providing finely divided substrate particles, dispersed in a carrier gas, on which to nucleate a catalyst, (2) providing a catalyst precursor within the carrier gas, (3) decomposing the catalyst precursor to the catalytic metal, which is deposited on the substrate to form a substrate-catalyst mixture in the carrier gas, and (4) adding an organic compound-containing gas that decomps. in the presence of the catalyst to form the nanoscale carbon materials on the substrate. Suitable catalyst precursors are one or more transition metal compds., in the form of a metal carbonyl or metal cyclopentadiene complex. The substrate can be silica, alumina, or a polyhedral oligomeric silsesquioxane. Decomposition of the catalyst precursor can be stimulated by laser irradiation or plasma discharge.

IT 50-00-0, Formaldehyde, processes 64-17-5, Ethanol, processes 67-56-1, Methanol, processes 67-64-1, Acetone, processes 71-43-2, Benzene, processes 74-82-8, Methane, processes 74-84-0, Ethane, processes 74-85-1, Ethylene, processes 74-86-2, Acetylene, processes 74-98-6, Propane, processes 75-07-0, Acetaldehyde, processes 85-01-8, Phenanthrene, processes 91-20-3, Naphthalene, processes 98-82-8, Cumene 100-41-4, Ethylbenzene, processes 108-88-3, Toluene, processes 115-07-1, Propylene, processes 120-12-7, Anthracene, processes 1330-20-7, Xylene, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(decomposition of; synthesis of nanoscale carbon materials by controlled thermal decomposition of and carbon deposition from organic compds. and transition metal catalysts)

RN 50-00-0 HCAPLUS
CN Formaldehyde (CA INDEX NAME)

$H_2C{=}O$

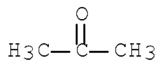
RN 64-17-5 HCAPLUS
CN Ethanol (CA INDEX NAME)

$H_3C{-}CH_2{-}OH$

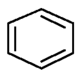
RN 67-56-1 HCAPLUS
CN Methanol (CA INDEX NAME)

$H_3C{-}OH$

RN 67-64-1 HCAPLUS
CN 2-Propanone (CA INDEX NAME)



RN 71-43-2 HCAPLUS
CN Benzene (CA INDEX NAME)



RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

RN 74-84-0 HCAPLUS
CN Ethane (CA INDEX NAME)

$H_3C—CH_3$

RN 74-85-1 HCAPLUS
CN Ethene (CA INDEX NAME)

$H_2C{=}CH_2$

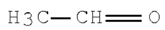
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

$HC{\equiv}CH$

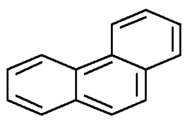
RN 74-98-6 HCAPLUS
CN Propane (CA INDEX NAME)

$H_3C—CH_2—CH_3$

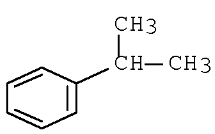
RN 75-07-0 HCAPLUS
CN Acetaldehyde (CA INDEX NAME)



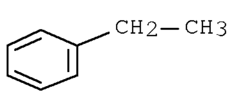
RN 85-01-8 HCAPLUS
CN Phenanthrene (CA INDEX NAME)



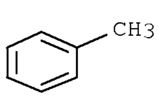
RN 91-20-3 HCAPLUS
CN Naphthalene (CA INDEX NAME)



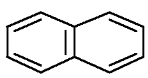
RN 98-82-8 HCAPLUS
CN Benzene, (1-methylethyl)- (CA INDEX NAME)



RN 100-41-4 HCAPLUS
CN Benzene, ethyl- (CA INDEX NAME)



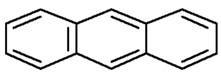
RN 108-88-3 HCAPLUS
CN Benzene, methyl- (CA INDEX NAME)



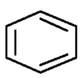
RN 115-07-1 HCAPLUS
CN 1-Propene (CA INDEX NAME)

$H_3C—CH{=}CH_2$

RN 120-12-7 HCAPLUS
CN Anthracene (CA INDEX NAME)



RN 1330-20-7 HCAPLUS
CN Benzene, dimethyl- (CA INDEX NAME)



2 (D1— Me)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Fan, Y	2000	38	789	CARBON	HCAPLUS
Hyperion Catalysis Int	1999			WO 9906618 A	HCAPLUS
Leland, J	2002			US 6362011 B1	HCAPLUS
Satishkumar, B	1998	293	47	CHEMICAL PHYSICS LET	HCAPLUS
Tda Res Inc	2001			WO 0138219 A	HCAPLUS

L98 ANSWER 15 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:878795 HCAPLUS Full-text
DN 137:341074
TI Plasma-enhanced chemical vapor deposition of multiwalled carbon nanofibers
AU Matthews, Kristopher; Cruden, Brett A.; Chen, Bin; Meyyappan, M.; Delzeit, Lance
CS NASA Ames Research Center, Moffett Field, CA, USA
SO Journal of Nanoscience and Nanotechnology (2002), 2(5), 475-480
CODEN: JNNOAR
PB American Scientific Publishers
DT Journal
LA English
AB Plasma-enhanced chemical vapor deposition is used to grow vertically aligned multiwalled carbon nanofibers (MWNFs). The graphite basal planes in these nanofibers are not parallel as in nanotubes; instead they exhibit a small angle resembling a stacked cone arrangement. A parametric study with varying process parameters such as growth temperature, feedstock composition, and

substrate power was conducted, and these parameters are found to influence the growth rate, diameter, and morphol. The well-aligned MWNFs are suitable for fabricating electrode systems in sensor and device development.

IT 74-85-1, Ethene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(in plasma CVD of multiwalled carbon nanofibers)

RN 74-85-1 HCAPLUS

CN Ethene (CA INDEX NAME)

$H_2C=CH_2$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Afanasyeva, N	1996	11	79	Vib Spectrosc	HCAPLUS
Baker, R	1973	30	86	J Catal	HCAPLUS
Bower, C	2000	77	2767	Appl Phys Lett	HCAPLUS
Bower, C	2000	77	830	Appl Phys Lett	HCAPLUS
Cassell, A	2001	17	266	Langmuir	
Chang, C	1996			ULSI Technology	
Chen, Y	1998	193	342	J Cryst Growth	HCAPLUS
Chhowalla, M	2001	90	5308	J Appl Phys	HCAPLUS
Chieu, T	1982	26	5867	Phys Rev B: Solid St	HCAPLUS
Choi, Y	2000	181	1864	J Vac Sci Technol, A	
Cui, H	2000	88	6072	J Appl Phys	HCAPLUS
Delzeit, L	2002	91	6027	J Appl Phys	HCAPLUS
Delzeit, L	2002	106	5629	J Phys Chem B	HCAPLUS
Endo, M	1999	14	4474	J Mater Res	HCAPLUS
Fan, S	1999	283	512	Science	HCAPLUS
Hash, D	2002			J Appl Phys, submitt	
Kortshagen, U	1996	29	1224	J Phys D: Appl Phys	HCAPLUS
Kutlel, O	1998	73	2113	Appl Phys Lett	
Li, J	2002	89	910	Appl Phys Lett	
Merkulov, V	2000	76	3555	Appl Phys Lett	HCAPLUS
Merkulov, V	2001	79	2970	Appl Phys Lett	HCAPLUS
Nguyen, C	2002		2	Nanoletters	
Nishmura, K	2000	15	1213	J Mater Res	
Nolan, D	1998	102	4165	J Phys Chem B	
Okai, M	2000	77	3468	Appl Phys Lett	HCAPLUS
Qin, L	1998	72	3437	Appl Phys Lett	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Teo, K	2001	79	1534	Appl Phys Lett	HCAPLUS
Tsai, S	1999	74	3462	Appl Phys Lett	HCAPLUS
Vidano, R	1978	61	13	J Am Ceram Soc	HCAPLUS
Zhang, Q	2000	61	1179	J Phys Chem Solids	HCAPLUS

L98 ANSWER 16 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2002:846404 HCAPLUS Full-text

DN 138:77197

TI Synthesis of high purity single-walled carbon nanotubes in high yield

AU Geng, Junfeng; Singh, Charanjeet; Shephard, Douglas S.; Shaffer, Milo S. P.; Johnson, Brian F. G.; Windle, Alan H.

CS Department of Chemistry, University of Cambridge, Cambridge, CB2 1EW, UK

SO Chemical Communications (Cambridge, United Kingdom) (2002), (22), 2666-2667

CODEN: CHCOFS; ISSN: 1359-7345
PB Royal Society of Chemistry
DT Journal
LA English
AB A simple method for the synthesis of high purity single-walled carbon nanotubes was developed by nickel formate as a precursor for the formation of nearly monodispersed nickel seed-nanoparticles as catalysts in the CVD growth process.
IT 74-82-8, Methane, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of high purity single-walled carbon nanotubes in high yield by Ni-catalyzed CVD using)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Ajayan, P	2002	296	705	Science	HCAPLUS
Anon				GB 0216654	
Bandow, S	1998	80	3779	Phys Rev Lett	HCAPLUS
Baughman, R	2002	297	787	Science	HCAPLUS
Cassell, A	1999	103	6484	J Phys Chem B	HCAPLUS
Cheung, C	2002	106	2429	J Phys Chem B	HCAPLUS
Colomer, J	2000	317	83	Chem Phys Lett	HCAPLUS
Dai, H	2000		43	Phys World	HCAPLUS
Edwards, A	1997	101	20	J Phys Chem B	HCAPLUS
Holden, J	1994	220	186	Chem Phys Lett	HCAPLUS
Merck research Laborato	2001		1166	The Merck Index, 13t	
Su, M	2000	322	321	Chem Phys Lett	HCAPLUS
Xia, B	2001	84	1	J Am Ceram Soc	

L98 ANSWER 17 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:823849 HCAPLUS Full-text
DN 138:146536
TI Vertically aligned carbon nanotube growth by pulsed laser deposition and thermal chemical vapor deposition methods
AU Sohn, Jung Inn; Nam, Chunghee; Lee, Seonghoon
CS Department of Materials Science and Engineering, Kwangju Institute of Science and Technology (K-JIST), Kwangju, 500-712, S. Korea
SO Applied Surface Science (2002), 197-198, 568-573
CODEN: ASUSEE; ISSN: 0169-4332
PB Elsevier Science B.V.
DT Journal
LA English
AB Vertically aligned carbon nanotubes were grown on various substrates such as a planar p-type Si(100) wafer, porous Si wafer, SiO_2, Si_3N_4, Al_2O_3, and Cr by using thermal chemical vapor deposition at 800° using C_2H_2 gas as a carbon source and Fe catalyst films deposited by a pulsed laser on the substrates. The Fe films were deposited for 5 min by using pulsed laser deposition (PLD). The advantage of Fe deposition by PLD over other deposition methods lies in the superior adhesion of Fe to a Si substrate due to the high kinetic energies of the generated Fe species. SEM images show that vertically well-aligned

carbon nanotubes are grown on Fe nanoparticles formed from the thermal annealing of the Fe film deposited by PLD on the various substrates. Atomic force microscopy images show that the Fe film annealed at 800° is broken into Fe nanoparticles 10-50 nm diameter The appropriate d. of Fe nanoparticles formed from thermal annealing of the film deposited by PLD is crucial in growing vertically aligned carbon nanotubes. With PLD and a lift-off method, the selective growth of carbon nanotubes was done on a patterned Fe-coated Si substrate.

IT 74-86-2, Acetylene, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(in vertically aligned carbon nanotube growth by using thermal CVD and pulsed laser deposited Fe film catalyst)

RN 74-86-2 HCAPLUS

CN Ethyne (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Choi, W	1999	75	3129	Appl Phys Lett	HCAPLUS
de Heer, W	1995	270	1179	Science	HCAPLUS
Fan, S	1999	283	512	Science	HCAPLUS
Gaskell, D	1995			Introduction to the	
Guo, T	1995	243	49	Chem Phys Lett	HCAPLUS
Iijima, S	1991	354	56	Nature	HCAPLUS
Journet, C	1997	388	756	Nature	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Ren, Z	1998	282	110	Science	
Rueckes, T	2000	289	94	Science	HCAPLUS
Sohn, J	2001	78	3130	Appl Phys Lett	HCAPLUS
Sohn, J	2001	1	61	Curr Appl Phys	
Tans, S	1998	393	49	Nature	HCAPLUS
Terrones, M	1997	388	52	Nature	HCAPLUS
Zhu, W	1999	75	873	Appl Phys Lett	HCAPLUS

L98 ANSWER 18 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2002:729706 HCAPLUS Full-text

DN 137:238223

TI Synthesis and Characterization of Carbon Nanofibers Produced by the Floating Catalyst Method

AU Singh, Charanjeet; Quested, Tom; Boothroyd, Chris B.; Thomas, Paul; Kinloch, Ian A.; Abou-Kandil, Ahmed I.; Windle, Alan H.

CS Department of Materials Science and Metallurgy, University of Cambridge, Cambridge, CB2 3QZ, UK

SO Journal of Physical Chemistry B (2002), 106(42), 10915-10922
CODEN: JPCBFK; ISSN: 1520-6106

PB American Chemical Society

DT Journal

LA English

AB A novel method is presented to synthesize herringbone-stacked carbon nanofibers in high selectivity using cobaltocene as the catalytic precursor. Thiophene was essential for carbon nanofiber growth while hydrogen was used as

the carrier gas. Selectivity close to 100% was achieved using cobaltocene, thiophene, and hydrogen reacted at 1100 °C. The conversion rate of the nanofibers collected in the cold trap was approx. 1.5 wt % of the initial products. The effect of the catalytic precursor temperature, thiophene, and acetylene was investigated, with reference to nanofiber diameter and selectivity.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Andrews, R	1999	75	1329	Appl Phys Lett	HCAPLUS
Baker, R	1972	26	51	J Catal	HCAPLUS
Baker, R	1973	30	86	J Catal	HCAPLUS
Bessel, C	2001	105	1115	J Phys Chem B	HCAPLUS
Bethune, D	1993	363	605	Nature	HCAPLUS
Boellaard, E	1985	96	481	J Catal	HCAPLUS
Chambers, A	1998	102	4253	J Phys Chem B	HCAPLUS
Ci, L	2000	38	1933	Carbon	HCAPLUS
Ci, L	2001	39	329	Carbon	HCAPLUS
Ebbesen, T	1992	358	220	Nature	HCAPLUS
Endo, M	1995	33	873	Carbon	HCAPLUS
Endo, M	1988	18	568	Chemtech	HCAPLUS
Endo, M	1999	14	4474	J Mater Res	HCAPLUS
Frank, S	1998	280	1744	Science	HCAPLUS
Iijima, S	1991	354	56	Nature	HCAPLUS
Iijima, S	1993	363	603	Nature	HCAPLUS
Ishioka, M	1992	30	865	Carbon	HCAPLUS
Joseyacaman, M	1993	62	657	Appl Phys Lett	HCAPLUS
Kato, T	1992	11	674	J Mater Sci Lett	HCAPLUS
Kim, M	1992	134	253	J Catal	HCAPLUS
Kim, M	1993	143	449	J Catal	HCAPLUS
Kratschmer, W	1990	347	354	Nature	
Krishnankutty, N	1996	158	217	J Catal	HCAPLUS
Kroto, H	1985	318	162	Nature	HCAPLUS
Lee, C	2001	340	413	J Chem Phys Lett	HCAPLUS
Merkulov, V	2000	76	3555	Appl Phys Lett	HCAPLUS
Park, C	1999	103	10572	J Phys Chem B	HCAPLUS
Park, C	2000	16	8050	Langmuir	HCAPLUS
Reimer, L	1998	39	873	Mater Trans	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Rodriguez, N	1993	140	16	J Catal	HCAPLUS
Rodriguez, N	1993	144	93	J Catal	HCAPLUS
Rodriguez, N	1993	8	3233	J Mater Res	HCAPLUS
Sandler, J	1999	40	5967	Polymer	HCAPLUS
Steigerwalt, E	2001	105	8097	J Phys Chem B	HCAPLUS
Tennent, H	1996			US 5578543	HCAPLUS
Terrones, H	2001	343	241	Chem Phys Lett	HCAPLUS
Thess, A	1996	273	483	Science	HCAPLUS
Thomas, P	2001	88	179	Ultramicroscopy	HCAPLUS
Treacy, M	1996	381	678	Nature	HCAPLUS
Tunistra, F	1970	53	1126	J Chem Phys	
Vander Wal, R	2000	104	11606	J Phys Chem B	HCAPLUS
Wong, E	1997	277	1971	Science	HCAPLUS

L98 ANSWER 19 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:681453 HCAPLUS Full-text
DN 138:238802
TI Carbon nanofiber-reinforced poly(ether ether ketone) composites
AU Sandler, Jan; Werner, Philipp; Shaffer, Milo S. P.; Demchuk, Vitaly; Altstaedt, Volker; Windle, Alan H.

CS Department of Materials Science and Metallurgy, University of Cambridge, Cambridge, CB2 3QZ, UK
SO Composites, Part A: Applied Science and Manufacturing (2002), 33A(8), 1033-1039
CODEN: CASMFJ; ISSN: 1359-835X
PB Elsevier Science Ltd.
DT Journal
LA English
AB PEEK nanocomposites containing vapor-grown carbon nanofibers (CNF) were produced using standard polymer processing techniques. Evaluation of the mech. properties revealed a linear increase in tensile stiffness and strength with CNF loading fraction to 15 wt%, while matrix ductility was maintained to 10 wt%. Electron microscopy confirmed the homogeneous dispersion and alignment of the fibers. An interpretation of the composite performance by short-fiber theory resulted in rather low intrinsic stiffness properties of the vapor-grown CNF. DSC showed an interaction between matrix and the nanoscale filler during processing. Such changes in polymer morphol. due to the presence of a nanoscale filler need to be considered when evaluating the mech. properties of nanocomposites.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Barlow, C	1990	21	383	Composites	HCAPLUS
Blundell, D	1983	24	953	Polymer	HCAPLUS
Carneiro, O	1998	58	401	Compos Sci Technol	HCAPLUS
Chou, T	1992			Microstructural desi	
Crick, R	1987	22	2094	J Mater Sci	HCAPLUS
David, L	1992	25	4302	Macromolecules	HCAPLUS
Goodwin, A	1997	38	2363	Polymer	HCAPLUS
Hull, D	1981			An introduction to c	
Iijima, S	1991	54	56	Nature	
Kuriger, R	2002	33	53	Composites, Part A	
Lozano, K	2001	79	125	J Appl Polym Sci	HCAPLUS
Ruoff, R	1995	33	925	Carbon	HCAPLUS
Salvetat, J	1999	11	161	Adv Mater	HCAPLUS
Shaffer, M	1999	11	937	Adv Mater	HCAPLUS
Thostenson, E	2001	61	1899	Compos Sci Technol	HCAPLUS
Tibbetts, G	1987	20	292	J Phys D: Appl Phys	HCAPLUS
Tibbetts, G	1999		35	Science and applicat	
Treacy, M	1996	381	680	Nature	
Tsagaropoulos, G	1995	28	6067	Macromolecules	HCAPLUS
Wong, E	1997	277	1971	Science	HCAPLUS
Yakobson, B	1996	76	2511	Phys Rev Lett	HCAPLUS
Yu, M	2000	84	5552	Phys Rev Lett	HCAPLUS
Yu, M	2000	287	637	Science	HCAPLUS

L98 ANSWER 20 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:679671 HCAPLUS Full-text
DN 138:26395
TI Production of aligned carbon nanotubes by the CVD injection method
AU Singh, Charanjeet; Shaffer, Milo; Kinloch, Ian ; Windle, Alan
CS Department of Materials Science and Metallurgy, Cambridge University, Cambridge, CB2 3QZ, UK
SO Physica B: Condensed Matter (Amsterdam, Netherlands) (2002), 323(1-4), 339-340
CODEN: PHYBE3; ISSN: 0921-4526
PB Elsevier Science B.V.

DT Journal
LA English
AB High-purity, aligned multi-walled carbon nanotubes films were grown on quartz substrates by injecting a solution of ferrocene in toluene. The injection chemical vapor deposition (CVD) method allows excellent control of the catalyst to carbon ratio. The nanotube diameter, length and alignment were controlled by varying the reaction parameters. In particular, the effects of temperature, catalyst concentration, and reaction time have been investigated.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Andrews, R	1999	303	467	Chem Phys Lett	

L98 ANSWER 21 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:679669 HCAPLUS Full-text
DN 138:114949
TI Controlled fabrication of aligned carbon nanotube patterns
AU Huang, Shaoming; Dai, Liming; Mau, Albert
CS CSIRO Molecular Science, Clayton South, 3169, Australia
SO Physica B: Condensed Matter (Amsterdam, Netherlands) (2002), 323(1-4), 333-335
CODEN: PHYBE3; ISSN: 0921-4526
PB Elsevier Science B.V.
DT Journal
LA English
AB The authors developed techniques to fabricate aligned carbon nanotubes (CNTs) patterns in large area by photolithog. and soft-lithog. technologies by either pre-patterning catalysts or polymers for substrate-site selective growth of CNTs based on chemical vapor deposition. The resolution of the formed aligned CNTs patterns by photo- and soft-lithog. can be down to micrometer scale and different structural features of the aligned CNTs patterns such as multi-dimensional patterns can be achieved by controlling the exptl. conditions.
IT 74-86-2, Acetylene, reactions
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(microfabrication of perpendicularly aligned carbon nanotube patterns by photolithog. or soft lithog. based on pyrolysis of iron phthalocyanine or hydrocarbon)
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

$HC\equiv CH$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Cassell, A	2001	17	260	Langmuir	HCAPLUS
Dresselhaus, M	2000			Carbon Nanotubes: Sy	
Fan, S	1999	283	512	Science	HCAPLUS
Gao, M	2000	39	3664	Angew Chem Int Ed	HCAPLUS
Huang, S	1999	9	1221	J Mater Chem	HCAPLUS
Huang, S	1999	103	4223	J Phys Chem B	HCAPLUS
Huang, S	2000	104	2193	J Phys Chem B	HCAPLUS

Kind, H	1999	11	1285	Adv Mater	HCAPLUS
Li, D	2000	316	349	Chem Phys Lett	HCAPLUS
Yang, Y	1999	121	10832	J Am Chem Soc	HCAPLUS

L98 ANSWER 22 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:338767 HCAPLUS Full-text
DN 137:171812
TI Multi-walled carbon nanotubes from ethylene diffusion flames
AU Yuan, Liming; Saito, Kozo; Hu, Wenchong; Chen, Zhi
CS Department of Mechanical Engineering, University of Kentucky, Lexington, KY, 40506, USA
SO NASA Conference Publication (2001), 210948(Proceedings of the Sixth Applied Diamond Conference/Second Frontier Carbon Technology Joint Conference, 2001), 810-815
CODEN: NACPDX; ISSN: 0191-7811
PB National Aeronautics and Space Administration
DT Journal
LA English
AB Multi-walled carbon nanotubes (MWNTs) were synthesized from a laminar ethylene diffusion flame with a stainless steel grid as the substrate. The grid was first oxidized using a premixed propane flame to generate a layer of metal oxide particles (iron oxide, chromium oxide and nickel oxide) which could act as catalyst particles for the nanotube growth. The as-grown nanotubes were entangled and curved with diams. ranging from 10 to 60 nm. Carbon nanofibers were also found; they might grow by thickening the nanotube walls. The maximum growth rate of nanotubes was approx. 2-5μm/min and 3 mg /min. A nitrogen-diluted ethylene flame reduced the growth rate of carbon nanofibers, probably by lower concns. of pyrolyzed hydrocarbons due to a lowered flame temperature A cobalt-electrodeposited stainless steel grid produced vertically oriented, well-aligned and well-graphitized carbon nanotubes consisting of each nanotube diameter 20 nm and length 10 μm.
IT 74-85-1, Ethylene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(synthesis of multi-walled carbon nanotubes from ethylene diffusion flames with stainless steel grid as substrate)
RN 74-85-1 HCAPLUS
CN Ethene (CA INDEX NAME)

$H_2C{=}CH_2$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Baker, R	1989	27	315	Carbon	HCAPLUS
Cassell, A	1999	103	6484	J Phys Chem B	HCAPLUS
Ebbesen, T	1997			Carbon nanotubes: pr	
Ebbesen, T	1992	358	220	Nature	HCAPLUS
Endo, M	1995	33	873	Carbon	HCAPLUS
Guo, T	1995	243	49	Chemical Physics Let	HCAPLUS
Howard, J	1994	370	603	Nature	
Iijima, S	1991	354	56	Nature	HCAPLUS
Li, W	2001	335	141	Chemical Physics Let	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Matveev, A	2001		137	Carbon	
Richter, H	1996	34	427	Carbon	HCAPLUS

Saito, K	1991	80	103	Combust Sci and Tech	HCAPLUS
Vander wal, R	2000	323	217	Chemical Physics Let	HCAPLUS
Yuan, L	2001			Chemical Physics let	

L98 ANSWER 23 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:265973 HCAPLUS Full-text
DN 136:376280
TI Electrochemical capacitance of nanocomposite films formed by coating aligned arrays of carbon nanotubes with polypyrrole
AU Hughes, Mark; Shaffer, Milo S. P.; Renouf, Annette C.; Singh, Charanjeet; Chen, George Z.; Fray, Derek J.; Windle, Alan H.
CS Department of Materials Science and Metallurgy, University of Cambridge, Cambridge, CB2 3QZ, UK
SO Advanced Materials (Weinheim, Germany) (2002), 14(5), 382-385
CODEN: ADVMEW; ISSN: 0935-9648
PB Wiley-VCH Verlag GmbH
DT Journal
LA English
AB The supercapacitive properties of an aligned multiwalled nanotube-conducting polymer composite and the benefits conferred by the excellent nanostructural control offered by these films were analyzed. Exptl. studies demonstrate that aligned MWNT-PPy composite films offer a combination of exceptional charge storage capacities and improved device response times relative to pure PPy films. The superior performance of these composites relative to their component materials is linked to the combination of electrolyte accessibility, reduced diffusion distances, and increased conductivity in the redox pseudo-capacitive composite structure. These results suggest that arrays of aligned MWNTs coated with conducting polymer composites are not only well suited to energy storage applications such as supercapacitors and secondary batteries, but also to use in devices such as sensors that would benefit from this desirable combination of properties.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Albery, W	1989	88	247	Faraday Discuss	HCAPLUS
Avigal, Y	2001	78	2291	Appl Phys Lett	HCAPLUS
Cao, A	2001	335	150	Chem Phys Lett	HCAPLUS
Che, G	1999	15	750	Langmuir	HCAPLUS
Chen, G	2000	12	522	Adv Mater	HCAPLUS
Chen, J	2001	73	129	Appl Phys A - Mater	HCAPLUS
Downs, C	1999	11	1028	Adv Mater	HCAPLUS
Frackowiak, E	2001	97-8	822	J Power Sources	
Fusalba, F	1999	11	2743	Chem Mater	HCAPLUS
Gao, M	2000	39	3664	Angew Chem Int Ed	HCAPLUS
Hong, W	2000	39	L925	Jpn J Appl Phys	HCAPLUS
Huang, S	1999	103	4223	J Phys Chem B	HCAPLUS
Hughes, M				Chem Mater in press	
Lee, C	1999	312	461	Chem Phys Lett	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Murakami, H	2000	76	1776	Appl Phys Lett	HCAPLUS
Nerushev, O	2001	11	1122	J Mater Chem	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Rohmund, F	2000	328	369	Chem Phys Lett	HCAPLUS
Wang, X	2001	340	419	Chem Phys Lett	HCAPLUS
Wen, C	1981	5	253	Int Metall Rev	
Xie, S	1999	11	1135	Adv Mater	HCAPLUS
Xu, N	2001	34	1597	J Phys D: Appl Phys	HCAPLUS

L98 ANSWER 24 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:89666 HCAPLUS Full-text
DN 136:271153
TI Growth of vertically aligned bamboo-shaped carbon nanotubes
AU Lee, Cheol Jin; Lee, Tae Jae; Lyu, Seung Chul; Huh, Yoon; Lee, Jeong Yong
CS School of Electrical Engineering, Kunsan National University, Kunsan, 573-701, S. Korea
SO Journal of the Korean Physical Society (2001), 39(Suppl. Issue), S59-S62
CODEN: JKPSDV; ISSN: 0374-4884
PB Korean Physical Society
DT Journal
LA English
AB The vertically aligned uniformed C nanotubes (CNTs) on a large area of Ni deposited Si substrates were grown by thermal CVD using C2H2 gas. The diameter of CNTs is as small as .apprx.60 nm and the length is .apprx.50 μm. High-resolution TEM anal. reveals that the CNTs have the uniformed multi-walls, the bamboo structure, and the sharp closed tip. The CNTs have multi-walls with good crystallinity and there are some defects on the wall surface. The base growth model is suitable to bamboo-shaped CNTs using thermal CVD .
IT 74-86-2, Acetylene, processes
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(growth of vertically aligned bamboo-shaped carbon nanotubes)
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Bethune, D	1993	363	605	Nature	HCAPLUS
de Heer, W	1995	270	1179	Science	HCAPLUS
Delaney, P	1998	391	466	Nature	HCAPLUS
Fan, S	1999	283	512	Science	HCAPLUS
Iijima, S	1991	354	56	Nature	HCAPLUS
Journet, C	1997	388	756	Nature	HCAPLUS
Kim, Y	2000	37	85	J Korean Phys Soc	HCAPLUS
Kuttel, O	1998	73	2113	Appl Phys Lett	HCAPLUS
Lee, C	1999	75	1721	Appl Phys Lett	HCAPLUS
Lee, C	2000	323	554	Chem Phys Lett	HCAPLUS
Lee, C	2000	323	560	Chem Phys Lett	HCAPLUS
Lee, C	2000	37	858	J Korean Phys Soc	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Seifert, G	2000	37	89	J Korean Phys Soc	HCAPLUS
Sung, S	1999	74	197	Appl Phys Lett	HCAPLUS
Tans, S	1997	386	474	Nature	HCAPLUS
Tans, S	1998	393	49	Nature	HCAPLUS
Terrones, M	1997	388	52	Nature	HCAPLUS
Thess, A	1996	273	483	Science	HCAPLUS

Treacy, M	1996	381	678	Nature	HCAPLUS
Whitney, T	1993	261	1316	Science	HCAPLUS

L98 ANSWER 25 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:89653 HCAPLUS Full-text
DN 136:220608
TI The role of ammonia treatment in the alignment of the carbon nanotubes synthesized with Ni and Fe via thermal chemical vapor deposition
AU Choi, K. S.; Cho, Y. S.; Hong, S. Y.; Park, J. B.; Kim, D. J.; Kim, H. J.
CS Department of Materials Engineering, Chungnam National University, Taejon, 305-764, S. Korea
SO Journal of the Korean Physical Society (2001), 39(Suppl. Issue), S7-S10
CODEN: JKPSDV; ISSN: 0374-4884
PB Korean Physical Society
DT Journal
LA English
AB The effects of ammonia on alignment of carbon nanotubes in an atmospheric pressure thermal chemical vapor deposition assisted by Ni and Fe were investigated. It was confirmed that ammonia is critical to the alignment of nanotubes at temps. of 800.apprx.950°. The role of NH_3 for the alignment of the carbon nanotubes was preventing a deposit of amorphous carbon on the surface of the metal particles, particularly in its initial stage of the synthesis, and thus allowing a dense growth of the tubes. The structure of vertically aligned carbon nanotubes was also examined by HRTEM and Raman spectroscopy.
IT 74-86-2, Acetylene, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(ammonia treatment in alignment of carbon nanotubes synthesized with nickel and iron via thermal chemical vapor deposition)
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Chen, X	1999	339	6	Thin Solid Films	HCAPLUS
Fan, S	1999	283	512	Science	HCAPLUS
Jun-Hoi, L	2001	38	99	J Korean Phys Soc	
Kyoung, S	2001	39	291	J Korean Phys Soc	
Lee, C	1999	312	461	Chem Phys Lett	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Ren, R	1998	282	1105	Science	
Seuungwu, H	2001	39	564	J Korean Phys Soc	
Tsai, S	1999	74	3462	Appl Phys Lett	HCAPLUS
Yusadaka, M	1995	67	2477	Appl Phys Lett	

L98 ANSWER 26 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:72356 HCAPLUS Full-text
DN 136:111351

TI Method for making carbon films capable of emitting electrons, by chemical vapor deposition
IN Semeria, Marie-Noeelle; Baylet, Jacques; Fournier, Adeline
PA Commissariat a l'Energie Atomique, Fr.
SO PCT Int. Appl., 30 pp.
CODEN: PIXXD2
DT Patent
LA French
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002006559	A1	20020124	WO 2001-FR2304	20010716 <--
	W: JP, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	FR 2811686	A1	20020118	FR 2000-9309	20000717 <--
	FR 2811686	B1	20030110		
PRAI	FR 2000-9309	A	20000717 <--		

AB The invention concerns a method for making a carbon film capable of emitting electrons, under the action of an elec. field, by plasma chemical vapor deposition. It consists in performing the process in a sealed chamber comprising a first electrode supporting a substrate and a second electrode; introducing in the chamber proximate to the second electrode a gas mixture containing a carbonaceous gas, under pressure ranging from 0.13 to 13.33 Pa; heating the substrate to a temperature ranging between 300 to 800 °C, and applying a radiofrequency power to the second electrode to produce a plasma by ionizing the gas mixture and in depositing on the carbon substrate in the form of carbon nanostructures curved sheets with radius of curvature ranging between 2 and 50 nm.

IT 74-82-8, Methane, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(chemical vapor deposition method for making carbon films capable of emitting electrons)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Chen, Y	1998	73	2119	APPLIED PHYSICS LETT	HCAPLUS
Dorfman, B	2000			US 6080470 A	HCAPLUS
Ito, S	1989			US 4842945 A	HCAPLUS
Masako, Y	1995	67	2477	APPLIED PHYSICS LETT	
Matsushita Electric Ind	1998			EP 0826791 A	HCAPLUS
Merkulov, V	1999	75	1228	APPLIED PHYSICS LETT	HCAPLUS
Shioya, J	1987			US 4645713 A	HCAPLUS
Yudasaka, M	1994	64	842	APPLIED PHYSICS LETT	HCAPLUS

L98 ANSWER 27 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:55397 HCAPLUS Full-text
DN 136:378177
TI Effects of spatial separation on the growth of vertically aligned carbon nanofibers produced by plasma-enhanced chemical

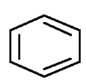
vapor deposition
AU Merkulov, Vladimir I.; Melechko, Anatoli V.; Guillorn, Michael A.; Lowndes, Douglas H.; Simpson, Michael L.
CS Molecular-Scale Engineering and Nanoscale Technologies Research Group, Oak Ridge National Laboratory, Oak Ridge, TN, 37831, USA
SO Applied Physics Letters (2002), 80(3), 476-478
CODEN: APPLAB; ISSN: 0003-6951
PB American Institute of Physics
DT Journal
LA English
AB Vertically aligned C nanofibers (VACNFs) with vastly different spacing were grown by catalytically controlled d.c. glow discharge CVD using Ni catalysts. Both densely packed VACNFs and essentially isolated VACNFs were studied using SEM and x-ray energy dispersive spectroscopy. The morphol. and chemical composition of isolated VACNFs have a strong dependence upon the growth conditions, in particular on the C2H2/NH3 gas mixture used. This is attributed to the sidewalls of isolated VACNFs being exposed to reactive species during growth. In contrast, the sidewalls of densely packed VACNFs were shielded by the neighboring VACNFs, so that their growth occurred mainly in the vertical direction, by diffusion of C through the catalyst nanoparticle and subsequent precipitation at the nanofiber/ nanoparticle interface. These striking differences in the growth process gave flattened C nanostructures (C nanotriangles) and also are quite important for the realization of VACNF-based devices.
IT 74-86-2, Acetylene, processes
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(spatial separation effects on growth of vertically aligned carbon nanofibers produced by plasma-enhanced chemical vapor deposition using catalysts)
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Baker, R	1989	27	315	Carbon	HCAPLUS
Bower, C	2000	77	830	Appl Phys Lett	HCAPLUS
Chhowala, M	2001	90	5308	J Appl Phys	
Guillorn, M	2001	79	3506	Appl Phys Lett	HCAPLUS
Huang, Z	1998	73	3845	Appl Phys Lett	HCAPLUS
Merkulov, V	2000	76	3555	Appl Phys Lett	HCAPLUS
Merkulov, V	2001	79	1178	Appl Phys Lett	HCAPLUS
Merkulov, V	2001	89	1933	J Appl Phys	HCAPLUS
Murakami, H	2000	76	1776	Appl Phys Lett	HCAPLUS
Nilsson, L	2000	76	2071	Appl Phys Lett	HCAPLUS
Ren, Z	1999	75	1086	Appl Phys Lett	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS

L98 ANSWER 28 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:41137 HCAPLUS Full-text
DN 136:220593
TI Self-organized arrays of carbon nanotube ropes

AU Zhang, Xianfeng; Cao, Anyuan; Li, Yanhui; Xu, Cailu; Liang, Ji; Wu, Dehai; Wei, Bingqing
CS Department of Mechanical Engineering, Tsinghua University, State Key Laboratory of Automotive Safety and Energy, Beijing, 100084, Peop. Rep. China
SO Chemical Physics Letters (2002), 351(3,4), 183-188
CODEN: CHPLBC; ISSN: 0009-2614
PB Elsevier Science B.V.
DT Journal
LA English
AB Aligned carbon nanotubes (CNTs) distributed uniformly on various substrates have been synthesized by chemical vapor deposition (CVD) method. Here, we report that by first depositing a film of amorphous carbon and random nanotubes, the aligned CNTs can self-organize into arrays of long macroscopic ropes on this film. The ropes have a uniform diameter (5-30 μm) and their length can reach 0.7 mm in 30 min. The CNTs in each rope are either parallel to or entangled with each other, implying high mech. strength of these ropes, which have potential applications as a composite enhancer or a high-strength nanostructure.
IT 1330-20-7, Xylene, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(hydrocarbon source; CVD of self-organized arrays of carbon nanotube ropes on amorphous carbon-coated quartz sheet substrates)
RN 1330-20-7 HCAPLUS
CN Benzene, dimethyl- (CA INDEX NAME)



2 (D1— Me)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Andrews, R	1999	303	467	Chem Phys Lett	HCAPLUS
Cao, A	2001	39	152	Carbon	HCAPLUS
Cao, A	2001	335	150	Chem Phys Lett	HCAPLUS
Dai, H	1996	384	147	Nature	HCAPLUS
de Heer, W	1995	270	1179	Science	HCAPLUS
de Heer, W	1995	268	845	Science	HCAPLUS
Delaney, P	1998	391	466	Nature	HCAPLUS
Dillon, A	1997	386	377	Nature	HCAPLUS
Ebbesen, T	1997		191	Carbon Nanotubes:Pre	
Ebbesen, T	1996	382	54	Nature	HCAPLUS
Frank, S	1998	280	1744	Science	HCAPLUS
Iijima, S	1991	354	56	Nature	HCAPLUS
Kong, J	2000	287	622	Science	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Rao, C	1998		1525	Chem Commun	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Rinzler, A	1995	269	1550	Science	HCAPLUS

Schadler, L	1998	73	3842	Appl Phys Lett	HCAPLUS
Tans, S	1998	393	49	Nature	HCAPLUS
Vigolo, B	2000	290	1331	Science	HCAPLUS
Wong, S	1998	394	52	Nature	HCAPLUS

L98 ANSWER 29 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:937656 HCAPLUS Full-text
DN 136:202602
TI Sharpening of carbon nanocone tips during plasma-enhanced chemical vapor growth
AU Merkulov, Vladimir I.; Melechko, Anatoli V.; Guillorn, Michael A.; Lowndes, Douglas H.; Simpson, Michael L.
CS Molecular-Scale Engineering and Nanoscale Technologies Research Group, Oak Ridge National Laboratory, Oak Ridge, TN, 37831, USA
SO Chemical Physics Letters (2001), 350(5,6), 381-385
CODEN: CHPLBC; ISSN: 0009-2614
PB Elsevier Science B.V.
DT Journal
LA English
AB In situ tip sharpening of vertically aligned carbon nanocones (VACNCs) was demonstrated. VACNCs were synthesized on patterned catalyst dots of 100 nm in diameter using d.c. plasma-enhanced chemical vapor deposition. The VACNC tip diameter was found to decrease with growth time. This enables synthesis of ultra-sharp VACNCs even for relatively large catalyst dot sizes, which is quite important for practical applications. We also find that for a given set of growth parameters the diameter of the initially formed catalyst nanoparticle dets. the maximum length of the growing VACNC. The mechanism of VACNC growth and sharpening is discussed.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Bower, C	2000	77	2767	Appl Phys Lett	HCAPLUS
Bower, C	2000	77	830	Appl Phys Lett	HCAPLUS
Chhowala, M	2001	90	5308	J Appl Phys	
Kim, Y	1997	81	944	J Appl Phys	HCAPLUS
Merkulov, V	2000	76	3555	Appl Phys Lett	HCAPLUS
Merkulov, V	2001	79	1178	Appl Phys Lett	HCAPLUS
Merkulov, V	2001	79	2970	Appl Phys Lett	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS

L98 ANSWER 30 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:935151 HCAPLUS Full-text
DN 136:394768
TI Production and derivatisation of carbon nanotubes
AU Rohmund, F.; Gromov, A.; Morjan, R.-E.; Nerushev, O.; Sato, Y.; Sveningsson, M.; Campbell, E. E. B.
CS School of Physics and Engineering Physics, Gothenburg University and Chalmers University of Technology, Goeteborg, SE-412 96, Swed.
SO AIP Conference Proceedings (2001), 591(Electronic Properties of Molecular Nanostructures), 167-170
CODEN: APCPCS; ISSN: 0094-243X
PB American Institute of Physics
DT Journal
LA English
OS CASREACT 136:394768
AB Both single-walled (SWNT) and multi-walled carbon nanotubes (MWNT) were produced using transition metal catalyzed CVD. Carbon shell encapsulated metal nanoparticles were obtained during the production of SWNT material. Arrays of MWNT were also produced from C60 by the process similar to iron-

catalyzed CVD. The field emission results of the so-produced arrays of MWNT are discussed. Carbon nanotubes were etched chemical, providing short multi-walled nanotube capsules, which are mostly open-ended. Further derivatization on the carbon nanotubes was achieved by using the reactivity of the carboxylic groups to build aligned arrays of carbon nanotubes (CNT) on a substrate or attach the nanotubes to aminoterminated latex beads.

IT 74-86-2, Acetylene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of carbon nanotubes by transition metal catalyzed CVD of acetylene or fullerene C60)

RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

$HC\equiv CH$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Bladh, K	2000	A70	317	Appl Phys	
Eklund, P	1995	33	959	Carbon	HCAPLUS
Morjan, R	2001			J Chem Mater, accept	
Nerushev, O	2001	11	1122	J Mat Chem	HCAPLUS
Rohmund, F				unpublished results	

L98 ANSWER 31 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:929159 HCAPLUS Full-text
DN 136:394761
TI Synthesis of vertically aligned carbon nanotubes on a large area using thermal chemical vapor deposition
AU Lee, C. J.; Son, K. H.; Lee, T. J.; Lyu, S. C.; Yoo, J. E.
CS School of Electrical Engineering, Kunsan National University, Kunsan, 573-701, S. Korea
SO AIP Conference Proceedings (2001), 590(Nanonetwork Materials), 55-58
CODEN: APCPCS; ISSN: 0094-243X
PB American Institute of Physics
DT Journal
LA English
OS CASREACT 136:394761
AB Vertically well-aligned carbon nanotubes (CNTs) were homogeneously grown on iron deposited silicon oxide substrate by thermal CVD of acetylene. The CNTs have an uniform length of 100 µm and a diameter at 100-200 nm. The CNTs reveal closed tip and very clean surface without any carbonaceous particles. The CNTs have no encapsulated iron particles at the closed tip and a bamboo structure in which the curvature of compartment layers is directed to the tip.

IT 74-86-2, Acetylene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of vertically aligned carbon nanotubes on iron deposited silicon oxide substrate by thermal chemical vapor deposition of acetylene)

RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

$HC \equiv CH$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Fan, S	1999	283	512	Science	HCAPLUS
Iijima, S	1991	354	56	Nature	HCAPLUS
Journet, C	1997	388	756	Nature	HCAPLUS
Kasuya, A	1997	78	4434	Phys Rev Lett	HCAPLUS
Lee, C	1999	75	1721	Appl Phys Lett	HCAPLUS
Lee, C	2000	323	560	Chem Phys Lett	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Terrones, M	1997	388	52	Nature	HCAPLUS
Thess, A	1996	273	483	Science	HCAPLUS

L98 ANSWER 32 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:708966 HCAPLUS Full-text
DN 135:361457
TI Ethylene flame synthesis of well-aligned multi-walled carbon nanotubes
AU Yuan, L.; Saito, K.; Hu, W.; Chen, Z.
CS Department of Mechanical Engineering, University of Kentucky, Lexington, KY, 40506-0108, USA
SO Chemical Physics Letters (2001), 346(1,2), 23-28
CODEN: CHPLBC; ISSN: 0009-2614
PB Elsevier Science B.V.
DT Journal
LA English
AB A stainless steel grid baked by a propane-air premixed flame had iron, chromium and nickel oxide deposits on the grid surface. With this grid, entangled and curved shape multi-walled carbon nanotubes (MWNTs) were harvested from an ethylene-air diffusion flame with yield rate of 3 mg/min. Nitrogen addition to the flame was found to straighten the entangled tubes probably by lowering the flame temperature A cobalt-electrodeposited stainless steel grid was finally applied to the nitrogen-diluted ethylene diffusion flame; well-aligned and well-graphitized carbon nanotubes consisting of 20 nm diameter and 10 μm long element tubes were obtained.
IT 74-85-1, Ethene, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(carbon source; ethylene flame synthesis of well-aligned multi-walled carbon nanotubes on propane flame-baked stainless steel and Co-electrodeposited stainless steel grid substrates)
RN 74-85-1 HCAPLUS
CN Ethene (CA INDEX NAME)

$H_2C{=}CH_2$

IT 74-98-6, Propane, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(flame, air-mixture, oxidizing atmospheric; ethylene flame synthesis of well-

aligned multi-walled carbon nanotubes on propane
flame-baked stainless steel and Co-electrodeposited stainless steel
grid substrates)

RN 74-98-6 HCAPLUS
CN Propane (CA INDEX NAME)

$H_3C-CH_2-CH_3$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Baker, R	1989	27	315	Carbon	HCAPLUS
Ebbesen, T	1997			Carbon Nanotubes:Pre	
Endo, M	1995	33	873	Carbon	HCAPLUS
Howard, J	1994	370	603	Nature	
Li, W	2001	335	141	Chem Phys Lett	HCAPLUS
Richter, H	1996	34	427	Carbon	HCAPLUS
Saito, K	1991	80	103	Combust Sci Technol	HCAPLUS
Vander Wal, R	2000	323	217	Chem Phys Lett	HCAPLUS
Yuan, L	2001	340	237	Chem Phys Lett	HCAPLUS

L98 ANSWER 33 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:474672 HCAPLUS Full-text
DN 135:51598
TI Iron particle catalysed CVD growth of carbon nanotubes
AU Rohmund, Frank; Nerushev, Oleg A.; Sveningsson, Martin; Campbell, Eleanor E. B.
CS School of Physics and Engineering Physics, Gothenburg University and Chalmers University of Technology, Goeteborg, S-412 96, Swed.
SO Physics and Chemistry of Clusters, Proceedings of Nobel Symposium, 117th, Visby, Sweden, June 27-July 2, 2000 (2001), Meeting Date 2000, 303-306. Editor(s): Campbell, Eleanor E. B.; Larsson, Mats. Publisher: World Scientific Publishing Co. Pte. Ltd., Singapore, Singapore. CODEN: 69BLC9
DT Conference
LA English
AB Synthesis of nanotube films is achieved by chemical vapor deposition (CVD) of acetylene on silicon substrates. Aligned and non-aligned multi-walled nanotubes (MWNT) are obtained in large amts. by the catalytic activity of supported iron particles. The latter are produced in situ by thermal pyrolysis of iron pentacarbonyl. We present an anal. of the morphol. of the metal particle deposit, the impact on heating such a film to the CVD processing temperature of 750°C as well as the growth of carbon nanotubes on such films.
IT 74-86-2, Acetylene, reactions
RL: PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(iron particle catalyzed CVD growth of carbon nanotubes)
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

$HC \equiv CH$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
de Heer, W	1995	268	845	Science	HCAPLUS
Groning, O	2000	18	665	J Vac Sci Technol B	HCAPLUS
Lee, C	1999	312	461	Chem Phys Lett	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Rohmund, F	2000	328	369	Chem Phys Lett	HCAPLUS
Saito, R	1998			Physical properties	

L98 ANSWER 34 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:429101 HCAPLUS Full-text
DN 135:36212
TI Carbon nanofibers grown on soda-lime glass at 500°C using thermal chemical vapor deposition
AU Lee, C. J.; Lee, T. J.; Park, J.
CS School of Electrical Engineering, Kunsan National University, Kunsan, 573-701, S. Korea
SO Chemical Physics Letters (2001), 340(5,6), 413-418
CODEN: CHPLBC; ISSN: 0009-2614
PB Elsevier Science B.V.
DT Journal
LA English
AB Carbon nanofibers are grown homogeneously on a large area of nickel-deposited soda-lime glass substrate by thermal chemical vapor deposition of acetylene at 500°. The diams. of carbon nanofibers are uniformly distributed in the range between 50 and 60 nm. Most of the carbon nanofibers are curved or bent in shape, but some fractions are twisted. They consist of defective graphitic sheets with a herringbone morphol. The maximum emission c.d. from the carbon nanofibers is 0.075 mA/cm2 at 16 V/μm, which is sufficient for commercializing the carbon-nanofibers-based field emission displays.
IT 74-86-2, Acetylene, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(in CVD of carbon nanofibers on soda-lime glass)
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

$HC \equiv CH$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Ahn, C	1998	73	3378	Appl Phys Lett	HCAPLUS
Anderson, P	2000	12	823	Chem Mater	HCAPLUS
Anderson, P	1999	14	2912	J Mater Res	HCAPLUS
Bai, X	2000	76	2624	Appl Phys Lett	HCAPLUS
Baker, R	1978	14	83	Chemistry and Physic	
Baker, R	1972	26	51	J Catal	HCAPLUS
Baker, R	1973	30	86	J Catal	HCAPLUS

Chambers, A	1997	101	1621	J Phys Chem B	HCAPLUS
Chambers, A	1998	102	2251	J Phys Chem B	HCAPLUS
Chen, Y	1998	73	2119	Appl Phys Lett	HCAPLUS
Kim, M	1991	131	60	J Catal	HCAPLUS
Kim, M	1992	134	253	J Catal	HCAPLUS
Lee, C	1999	75	1721	Appl Phys Lett	HCAPLUS
Lee, C	2000	326	175	Chem Phys Lett	HCAPLUS
Lee, C	2001	338	113	Chem Phys Lett	HCAPLUS
Lee, C	2001	337	398	J Ihm, Chem Phys Let	HCAPLUS
McCulloch, D	1994	50	5905	Phys Rev B	HCAPLUS
Menini, C	2000	104	4281	J Phys Chem B	HCAPLUS
Merkulov, V	2000	76	3555	Appl Phys Lett	HCAPLUS
Park, C	1998	102	5168	J Phys Chem B	HCAPLUS
Park, C	1999	103	10572	J Phys Chem B	HCAPLUS
Park, C	1999	103	2453	J Phys Chem B	HCAPLUS
Tesner, P	1970	8	435	Carbon	
Tuinstra, F	1970	53	1126	J Chem Phys	HCAPLUS
Wilhelm, H	1998	84	6552	J Appl Phys	HCAPLUS

L98 ANSWER 35 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2001:425017 HCAPLUS Full-text

DN 135:156541

TI Controlling growth of aligned carbon nanotubes from porous silicon templates

AU Xu, Dongsheng; Guo, Guolin; Gui, Linlin; Tang, Youqi; Shi, Zujin; Jin, Zhaoxia; Gu, Zhennan

CS Institute of Physical Chemistry, Peking University, Beijing, 100871, Peop. Rep. China

SO Science in China, Series B: Chemistry (2000), 43(5), 459-465
CODEN: SCBCFQ; ISSN: 1006-9291

PB Science in China Press

DT Journal

LA English

AB Fabricating well-aligned C nanotubes, especially, on a Si substrate is very important for their applications. An aligned C nanotube array was prepared by pyrolysis of hydrocarbons catalyzed by Ni nanoparticles embedded in porous Si (PS) templates. High-magnification TEM images confirm that the nanotubes are well graphitized. The PS substrates with pore sizes between 10 and 100 nm play a control role on the growth of C nanotubes and the diams. of the tubes increase with the enlargement of the pores of the substrates. However, such a control role cannot be found in the macro-PS substrates.

IT 74-85-1, Ethylene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(controlling growth of aligned carbon nanotubes from porous silicon templates during pyrolysis of hydrocarbons catalyzed by Ni nanoparticles)

RN 74-85-1 HCAPLUS

CN Ethene (CA INDEX NAME)

$H_2C{=}CH_2$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Ajayan, P	1994	265	1212	Science	HCAPLUS
Cullins, P	1996	69	1969	Appl Phys Lett	

Cullis, A	1997	82	909	J Appl Phys	HCAPLUS
de Heer, W	1995	270	1179	Science	HCAPLUS
de Heer, W	1995	268	845	Science	HCAPLUS
Fan, S	1999	283	512	Science	HCAPLUS
Hamada, M	1992	68	1579	Phys Rev Lett	
Iijima, S	1991	354	56	Nature	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Mintmire, J	1992	68	631	Phys Rev Lett	HCAPLUS
Rinzler, A	1995	269	1550	Science	HCAPLUS
Saito, Y	1998	67	95	Applied Physics, A,	HCAPLUS
Tans, S	1997	386	474	Nature	HCAPLUS
Tans, S	1998	393	49	Nature	HCAPLUS
Terrones, M	1997	388	52	Nature	HCAPLUS
Wang, Q	1997	70	3308	Appl Phys Lett	HCAPLUS
Wang, Q	1998	72	2912	Appl Phys Lett	HCAPLUS
Xu, D	1999	75	481	Appl Phys Lett	HCAPLUS

L98 ANSWER 36 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:376890 HCAPLUS Full-text
DN 134:359597
TI Field emission display device using vertically-aligned carbon nanotubes and economical manufacturing method to achieve good electric contact with conducting polymers
IN Lee, Cheol-Jin; Yoo, Jae-Eun
PA Iljin Nanotech Co., Ltd., S. Korea
SO Eur. Pat. Appl., 10 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	EP 1102299	A1	20010523	EP 2000-309105	20001016	<--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO					
	KR 2001049452	A	20010615	KR 2000-29581	20000531	<--
	JP 2001176431	A	20010629	JP 2000-321075	20001020	<--
	CN 1302079	A	20010704	CN 2000-130370	20001102	<--
PRAI	KR 1999-49020	A	19991105	<--		
	KR 2000-29581	A	20000531	<--		

AB In the field-emission display a metal film for a cathode is deposited on the lower substrate. Vertically aligned C nanotubes, acting as field emitter tips, are formed on the metal film. The vertical nanotubes are formed by coating metal catalyst particles on the metal film and CVD. A spacer is then deposited and a 2nd metal film of mesh shape is deposited as a gate contact. A 2nd spacer is formed followed by an upper substrate with a transparent contact and a fluorescent layer.
IT 74-82-8, Methane, processes 74-85-1, Ethylene, processes 74-86-2, Acetylene, processes 74-98-6, Propane, processes 115-07-1, Propylene, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(carbon nanotube precursor; field emission display device using vertically-aligned carbon nanotubes and economical manufacturing method using)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

RN 74-85-1 HCAPLUS
CN Ethene (CA INDEX NAME)

$H_2C{=}CH_2$

RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

$HC{\equiv}CH$

RN 74-98-6 HCAPLUS
CN Propane (CA INDEX NAME)

$H_3C{-}CH_2{-}CH_3$

RN 115-07-1 HCAPLUS
CN 1-Propene (CA INDEX NAME)

$H_3C{-}CH{=}CH_2$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
de Heer, W	1995	270	1179	SCIENCE	HCAPLUS
Kuttel, O	1999		120	DEVICE RESEARCH CONF	
Lee, N	2000		124	MICROPROCESSES AND N	
Saito, Y	1999		43	MHS '99 PROCEEDINGS	

L98 ANSWER 37 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:376889 HCAPLUS Full-text
DN 134:359596
TI Field emission display device using vertically-aligned carbon nanotubes and economical manufacturing method to achieve good electric contact with conducting polymers
IN Lee, Cheol-Jin; Yoo, Jae-Eun
PA Iljin Nanotech Co., Ltd., S. Korea
SO Eur. Pat. Appl., 11 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1
PATENT NO. KIND DATE APPLICATION NO. DATE

PI	EP 1102298	A1	20010523	EP 2000-309088	20001016 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	KR 2001049451	A	20010615	KR 2000-29580	20000531 <--
	JP 2001167721	A	20010622	JP 2000-321094	20001020 <--
	CN 1297218	A	20010530	CN 2000-130372	20001102 <--
PRAI	KR 1999-49018	A	19991105 <--		
	KR 2000-29580	A	20000531 <--		

AB In the field-emission display a metal film for a cathode is deposited on the lower substrate. Vertically aligned C nanotubes, acting as field emitter tips, are formed on the metal film. The vertical nanotubes are formed by coating metal catalyst particles on the metal film and CVD. A spacer is then deposited and an upper substrate with the transparent contact and a fluorescent layer are deposited.

IT 74-82-8, Methane, processes 74-85-1, Ethylene, processes 74-86-2, Acetylene, processes 74-98-6, Propane, processes 115-07-1, Propylene, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(carbon nanotube precursor; field emission display device using vertically-aligned carbon nanotubes and economical manufacturing method using)

RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

RN 74-85-1 HCAPLUS
CN Ethene (CA INDEX NAME)

$H_2C{=}CH_2$

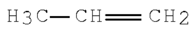
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

$HC{\equiv}CH$

RN 74-98-6 HCAPLUS
CN Propane (CA INDEX NAME)

$H_3C{-}CH_2{-}CH_3$

RN 115-07-1 HCAPLUS
CN 1-Propene (CA INDEX NAME)



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Canon Kk	1999			EP 0913508 A	HCAPLUS
Ise Electronics Corp	1999			EP 0905737 A	HCAPLUS
Kuttel, O	1999		120	DEVICE RESEARCH CONF	
Normile, D	1999	286	2056	SCIENCE	HCAPLUS

L98 ANSWER 38 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:207319 HCAPLUS Full-text
DN 134:255704
TI Growth of carbon nanofibers array under magnetic force by chemical vapor deposition
AU Sun, L. F.; Liu, Z. Q.; Ma, X. C.; Tang, D. S.; Zhou, W. Y.; Zou, X. P.; Li, Y. B.; Lin, J. Y.; Tan, K. L.; Xie, S. S.
CS Institute of Physics, Center for Condensed Matter Physics, Chinese Academy of Sciences, Beijing, 100080, Peop. Rep. China
SO Chemical Physics Letters (2001), 336(5,6), 392-396
CODEN: CHPLBC; ISSN: 0009-2614
PB Elsevier Science B.V.
DT Journal
LA English
AB The growth of carbon nanofibers arrays by chemical vapor deposition in the presence of and absence of a magnetic force at the same exptl. conditions is reported. The nanofibers are worse in alignment and less in graphitization than those of the nanotubes grown in absence of magnetic field. Two or three nanofibers can be connected together through a catalyst nanoparticle. These connections might be useful, especially in the fabrication of nanoelectronic devices.
IT 74-86-2, Ethine, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(effect of magnetic field on growth of carbon nanofibers array by chemical vapor deposition using)
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Ajayan, P	1994	265	1212	Science	HCAPLUS
Amelinkx, S	1994	265	635	Science	
Chico, L	1996	76	971	Phys Rev Lett	HCAPLUS
Dai, H	1996	272	523	Science	HCAPLUS
de Heer, W	1995	268	845	Science	HCAPLUS
Dresselhaus, M	1996			Science of Fullerene	
Ebbesen, T	1992	358	220	Nature (London)	HCAPLUS
Hamada, N	1992	68	1579	Phys Rev Lett	HCAPLUS
Hu, J	1999	399	48	Nature	HCAPLUS

Iijima, S	1991	354	56	Nature	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Ma, X	1999	75	3105	Appl Phys Lett	HCAPLUS
Mintmire, J	1992	68	631	Phys Rev Lett	HCAPLUS
Pan, Z	1999	299	97	Chem Phys Lett	HCAPLUS
Sun, L	1999	74	644	Appl Phys Lett	HCAPLUS
Sun, L	2000	403	384	Nature	HCAPLUS
Yao, Z	1999	402	273	Nature	HCAPLUS
Yokomichi, H	1999	74	1827	Appl Phys Lett	HCAPLUS
Zhang, Y	1999	285	1719	Science	HCAPLUS

L98 ANSWER 39 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:156294 HCAPLUS Full-text
DN 134:255698
TI Growth Model for Bamboolike Structured Carbon Nanotubes Synthesized Using Thermal Chemical Vapor Deposition
AU Lee, Cheol Jin; Park, Jeunghee
CS School of Electrical Engineering, Kunsan National University, Kunsan, 573-701, S. Korea
SO Journal of Physical Chemistry B (2001), 105(12), 2365-2368
CODEN: JPCBFK; ISSN: 1089-5647
PB American Chemical Society
DT Journal
LA English
AB Carbon nanotubes (CNTs) are grown vertically aligned on Fe catalytic particles deposited on a silicon oxide substrate at 550-950°C by thermal CVD of acetylene. All CNTs have a bamboolike structure in which the curvature of compartment layers is directed toward the tip, irresp. of the growth temperature Most of tips are closed and free from the encapsulation of Fe particles. However, the CNTs grown at 550°C sometimes encapsulate the Fe particle at the closed tip. On the basis of exptl. results, we provide a detailed growth model for the bamboolike structured CNTs grown using thermal chemical vapor deposition.
IT 74-86-2, Acetylene, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(carbon source; thermal CVD growth model for preparation of carbon nanotubes with bamboo-like structure)
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

$HC\equiv CH$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Baker, R	1989	27	315	Carbon	HCAPLUS
Baker, R	1986	90	4	J Phys Chem	
Bethune, D	1993	363	605	Nature	HCAPLUS
Blank, V	2000	38	217	Carbon	
Cassell, A	1999	103	6484	J Phys Chem	HCAPLUS
Chen, Y	2000	76	2469	Appl Phys Lett	HCAPLUS
Dai, H	1996	384	147	Nature	HCAPLUS
de Heer, W	1995	270	1179	Science	HCAPLUS
Fan, S	1999	283	512	Science	HCAPLUS

Iijima, S	1991	354	56	Nature	HCAPLUS
Journet, C	1997	388	756	Nature	HCAPLUS
Kovaleski, V	1998	36	963	Carbon	
Kukovitsky, E	2000	317	65	Chem Phys Lett	HCAPLUS
Lee, C	1999	75	1721	Appl Phys Lett	HCAPLUS
Lee, C	2000	323	560	Chem Phys Lett	HCAPLUS
Lee, C				Chem Phys Lett, subm	
Lee, Y	1997	78	734	Phys Rev Lett	
Li, D	2000	316	349	Chem Phys Lett	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Li, Y	1999		1141	Chem Commun	HCAPLUS
Liu, C	1999	286	1127	Science	HCAPLUS
Louchev, O	1999	74	194	Appl Phys Lett	HCAPLUS
Murakami, H	2000	76	1776	Appl Phys Lett	HCAPLUS
Okuyama, F	1997	71	623	Appl Phys Lett	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Saito, Y	1995	33	979	Carbon	HCAPLUS
Saito, Y	1993	134	154	J Cryst Growth	HCAPLUS
Saito, Y	1997	389	554	Nature	HCAPLUS
Terrones, M	1997	388	52	Nature	HCAPLUS
Thess, A	1996	273	483	Science	HCAPLUS
Wang, Z	1998	102	6145	J Phys Chem B	HCAPLUS

L98 ANSWER 40 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:56376 HCAPLUS Full-text
DN 134:133672
TI Well-aligned carbon nanotubes grown on a large-area Si substrate by thermal chemical-vapor deposition
AU Lee, Cheol Jin; Han, Jong Hun; Yoo, Jae Eun; Kang, Seung Youl; Lee, Jin Ho; Cho, Kyung-Ik
CS School of Electrical Engineering, Kunsan National University, Kunsan, 573-701, S. Korea
SO Journal of the Korean Physical Society (2000), 37(6), 858-861
CODEN: JKPSDV; ISSN: 0374-4884
PB Korean Physical Society
DT Journal
LA English
AB We have grown vertically aligned carbon nanotubes (CNTs) on large areas of Co-Ni codeposited Si substrates by using thermal chemical vapor deposition with C2H2 gas. The CNTs grown by thermal chemical vapor deposition are multiwalled structures, and the wall surfaces of the nanotubes are covered with a defective graphite sheet or carbonaceous particles. The CNTs range from 50 to 120 nm diameter and about 130 μm in length at 950 °C. The grown CNTs have a bamboo structure. As the particle size of the Co-Ni catalyst decreases, the diameter of the CNTs decreases, and the vertical alignment is significantly enhanced. Steric hindrance between nanotubes forces them to align vertically during the initial stage of the growth. The turn-on voltage is about 0.8 V/μm with a c.d. of 0.1 μA/cm2, and the emission-c.d. is about 1.1 μA/cm2 at 4.5 V/μm. The emission current reveals a Fowler-Nordheim mode.
IT 74-86-2, Acetylene, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(synthesis of vertically aligned carbon nanotubes on large areas of cobalt-nickel catalyst codeposited silicon substrates using thermal chemical vapor deposition with acetylene gas)
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

$HC\equiv CH$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Bethune, D	1993	363	605	Nature	HCAPLUS
Fan, S	1999	283	512	Science	HCAPLUS
Iijima, S	1991	354	56	Nature	HCAPLUS
Iijima, S	1993	363	603	Nature	HCAPLUS
Journet, C	1997	388	756	Nature	HCAPLUS
Lee, C	1999	75	1721	Appl Phys Lett	HCAPLUS
Lee, C	1999	312	461	Chem Phys Lett	HCAPLUS
Lee, C	2000	323	560	Chem Phys Lett	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Sung, S	1999	74	197	Appl Phys Lett	HCAPLUS
Terrones, M	1997	388	52	Nature	HCAPLUS
Thess, A	1996	273	483	Science	HCAPLUS

L98 ANSWER 41 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2000:900565 HCAPLUS Full-text
DN 134:45814
TI Manufacture of aligned, conductive substance filled carbon nanotubes on a substrate
IN Gao, Yufei; Liu, Jun
PA Battelle Memorial Institute, USA
SO PCT Int. Appl., 19 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000076912	A2	20001221	WO 2000-US16783	20000613 <--
	WO 2000076912	A3	20010525		

W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	US 2002004136	A1	20020110	US 1999-333876	19990614 <--
	US 6361861	B2	20020326		
	AU 2000078244	A	20010102	AU 2000-78244	20000613 <--
	US 2002055010	A1	20020509	US 2001-996523	20011128 <--
	US 7011771	B2	20060314		
PRAI	US 1999-333876	A	19990614 <--		
	WO 2000-US16783	W	20000613 <--		

AB The method provides a densely packed carbon nanotube growth perpendicular to the substrate where each nanotube is in contact with at least one nearest-neighbor nanotube and the hollow core of the nanotubes contains conductive filler comprising C and Ti, V, and/or Ta. The nanotubes have the length of 1-2 μm, the outside diameter of 50-400 nm and the inside diameter of 10-100 nm.

The substrate is a conductive material - Ti, TiC, V, or Ta coated with a growth catalyst - Fe or/and FeO, and the conductive filler can be single crystals of carbides formed by a solid state reaction between the substrate material and the growth catalyst. The manufacture includes the steps of (1) depositing a growth catalyst onto the conductive substrate, (2) creating vacuum within the vessel which contains the prepared substrate, (3) flowing H2/inert (e.g. Ar) gas within the vessel to increase and maintain the pressure within the vessel, (4) increasing the temperature of the prepared substrate and changing the H2/Ar gas to the flow of ethylene gas. Addnl., varying the d. and separation of the catalyst particles on the conductive substrate can be used to control the diameter of the nanotubes.

IT 74-85-1, Ethylene, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(precursor; precursor in manufacture of aligned, conductive substance filled carbon nanotubes on substrate)

RN 74-85-1 HCAPLUS

CN Ethene (CA INDEX NAME)

$H_2C{=}CH_2$

L98 ANSWER 42 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2000:900254 HCAPLUS Full-text

DN 134:58645

TI Low-temperature synthesis of carbon nanotubes using metal catalyst layer for decomposing carbon source gas

IN Lee, Cheol-Jin; Yoo, Jae-Eun

PA Iljin Nanotech Co., Ltd., S. Korea

SO Eur. Pat. Appl., 13 pp.
CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1061043	A1	20001220	EP 2000-305079	20000615 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	KR 2001066816	A	20010711	KR 2000-30353	20000602 <--
	CN 1277147	A	20001220	CN 2000-109211	20000614 <--
	JP 2001020072	A	20010123	JP 2000-178515	20000614 <--
	JP 3442033	B2	20030902		
PRAI	KR 1999-22418	A	19990615 <--		
	KR 2000-30353	A	20000602 <--		

AB In low-temperature synthesis of carbon nanotubes using a metal catalyst layer, the metal catalyst layer is formed over a substrate and etched to form isolated nano-sized catalytic metal particles. Carbon nanotubes, vertically aligned over the substrate, are grown from every isolated nano-sized catalytic metal particle through thermal chemical vapor deposition by decomposing a carbon source gas (e.g., C2H2) at a temperature equal to or lower than the strain temperature of the substrate using the decomposition catalyst layer.

IT 74-86-2, Acetylene, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(low-temperature synthesis of carbon nanotubes using metal catalyst layer for decomposing carbon source gas)

RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

$HC \equiv CH$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Huang, Z	1998	73	3845	APPLIED PHYSICS LETT	HCAPLUS
LI, W	1996	274	1701	SCIENCE	HCAPLUS
Lee, C	1999	75	1721	APPLIED PHYSICS LETT	HCAPLUS
Oin, L	1998	72	3437	APPLIED PHYSICS LETT	
Pan, Z	1999	299	97	CHEMICAL PHYSICS LET	HCAPLUS

L98 ANSWER 43 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2000:876751 HCAPLUS Full-text
DN 134:44120
TI Mass synthesis method for high purity carbon nanotubes vertically aligned over large-size substrate using thermal chemical vapor deposition
IN Lee, Cheol-Jin; Yoo, Jae-Eun
PA Iljin Nanotech Co., Ltd., S. Korea
SO Eur. Pat. Appl., 14 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	EP 1059266	A2	20001213	EP 2000-304855	20000608	<--
	EP 1059266	A3	20001220			
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO					
	KR 2001049479	A	20010615	KR 2000-30352	20000602	<--
	US 6350488	B1	20020226	US 2000-590687	20000609	<--
	CN 1277145	A	20001220	CN 2000-107805	20000612	<--
	JP 2001020071	A	20010123	JP 2000-175498	20000612	<--
	JP 3442032	B2	20030902			
PRAI	KR 1999-21855	A	19990611 <--			
	KR 1999-22419	A	19990615 <--			
	KR 2000-30352	A	20000602 <--			

AB A method of synthesizing high purity carbon nanotubes vertically aligned over a large size substrate by thermal chemical vapor deposition (CVD) is described. In the synthesis method, isolated nano-sized catalytic metal particles are formed over a substrate by etching, and purified carbon nanotubes are grown vertically aligned, from the catalytic metal particles by thermal CVD using a carbon source gas.

IT 74-86-2, Acetylene, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(mass synthesis method for high purity carbon nanotubes vertically aligned over large-size substrate using thermal chemical vapor deposition)
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

HC≡CH

L98 ANSWER 44 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2000:409885 HCAPLUS Full-text
DN 133:171370
TI Growth of well-aligned carbon nanotubes on a large area of Co-Ni co-deposited silicon oxide substrate by thermal chemical vapor deposition
AU Lee, C. J.; Park, J.; Kang, S. Y.; Lee, J. H.
CS School of Electrical Engineering, Kunsan National University, Kunsan, 573-701, S. Korea
SO Chemical Physics Letters (2000), 323(5,6), 554-559
CODEN: CHPLBC; ISSN: 0009-2614
PB Elsevier Science B.V.
DT Journal
LA English
AB The authors have grown vertically well-aligned multiwalled carbon nanotubes (CNT) on a large area of cobalt-nickel (Co-Ni) co-deposited silicon oxide substrate by thermal CVD using C2H2 gas, at 950°. The diameter of CNTs is at 50-120 nm and the length is .apprx.130 μm. The grown CNTs have a bamboo structure and closed tip with no catalytic particles inside. As the particle size of Co-Ni catalyst decreases, the vertical alignment is enhanced. The CNTs exhibits a low turn-on voltage of 0.8 V/μm with an emission c.d. of 0.1 μA cm-2.
IT 74-86-2, Acetylene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(growth of well-aligned carbon nanotubes on Co-Ni co-deposited silicon oxide substrate by thermal chemical vapor deposition)
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

HC≡CH

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Bethune, D	1993	363	605	Nature	HCAPLUS
Fan, S	1999	283	512	Science	HCAPLUS
Iijima, S	1991	354	56	Nature	HCAPLUS
Iijima, S	1993	363	603	Nature	HCAPLUS
Journet, C	1997	388	756	Nature	HCAPLUS
Kawashima, Y	1999	59	62	Phys Rev B	HCAPLUS
Lee, C	1999	75	1721	Appl Phys Lett	HCAPLUS
Lee, C	1999	312	461	Chem Phys Lett	HCAPLUS
Lee, C				sumitted	
Li, W	1996	274	1701	Science	HCAPLUS
Rao, A	1997	275	187	Science	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Saito, R	1999	59	2388	Phys Rev B	HCAPLUS
Saito, Y	1993	134	154	J Cryst Growth	HCAPLUS

Sung, S	1999	74	197	Appl Phys Lett	HCAPLUS
Terrones, M	1997	388	52	Nature	HCAPLUS
Thess, A	1996	273	483	Science	HCAPLUS

L98 ANSWER 45 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1999:443963 HCAPLUS Full-text
DN 131:207697
TI Controlling growth and field emission property of aligned carbon nanotubes on porous silicon substrates
AU Xu, Dongsheng; Guo, Guolin; Gui, Linlin; Tang, Youqi; Shi, Zujin; Jin, Zhaoxia; Gu, Zhennan; Liu, Weimin; Li, Xiulan; Zhang, Guanghua
CS Institute of Physical Chemistry, Peking University, Beijing, 100871, Peop. Rep. China
SO Applied Physics Letters (1999), 75(4), 481-483
CODEN: APPLAB; ISSN: 0003-6951
PB American Institute of Physics
DT Journal
LA English
AB An aligned and well-distributed carbon nanotubes array was produced by pyrolysis of hydrocarbons catalyzed by nickel nanoparticles embedded in porous silicon (PS) substrates . Scanning electron microscope images show that the nanotubes form an aligned array approx. perpendicular to the surface of the PS substrate and the diams. of most of the tubes within the array are 10-30 nm. High-magnification transmission electron microscopy images confirmed that the nanotubes are well graphitized and typically consist of about 15 concentric shells of carbon sheets. Furthermore, the strong field emission from the aligned carbon nanotubes emitter by pyrolysis of hydrocarbons was observed
IT 74-85-1, Ethene, processes
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(pyrolysis; controlling growth and field emission property of aligned carbon nanotubes on porous silicon substrates)
RN 74-85-1 HCAPLUS
CN Ethene (CA INDEX NAME)

$H_2C=CH_2$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Ajayan, P	1994	265	1212	Science	HCAPLUS
Bockrath, M	1997	275	1922	Science	HCAPLUS
Cullins, P	1996	69	1969	Appl Phys Lett	
De Heer, W	1995	270	1179	Science	HCAPLUS
De Heer, W	1995	268	845	Science	HCAPLUS
Feng, Z	1994			Porous Silicon	
Fowler, R	1928	119	173	Proc R Soc London Se	
Frank, S	1998	280	1744	Science	HCAPLUS
Hamada, N	1992	68	1579	Phys Rev Lett	HCAPLUS
Iijima, S	1991	354	56	Nature (London)	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Mintmire, J	1992	68	631	Phys Rev Lett	HCAPLUS
Rinzler, A	1995	269	1550	Science	HCAPLUS
Saito, Y	1997	36	L1340	Jpn J Appl Phys Part	
Saito, Y	1998	37	L346	Jpn J Appl Phys Part	HCAPLUS

Tans, S	1997	386	474	Nature (London)	HCAPLUS
Terrones, M	1997	388	52	Nature (London)	HCAPLUS
Thess, A	1996	273	483	Science	HCAPLUS
Wang, Q	1997	70	3308	Appl Phys Lett	HCAPLUS
Wang, Q	1998	72	2912	Appl Phys Lett	HCAPLUS

L98 ANSWER 46 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1999:391350 HCAPLUS Full-text
DN 131:188593
TI Bundles of aligned carbon nanotubes obtained by the pyrolysis of ferrocene-hydrocarbon mixtures: role of the metal nanoparticles produced in situ
AU Satishkumar, B. C.; Govindaraj, A.; Rao, C. N. R.
CS Solid State and Structural Chemistry Unit, CSIR Centre of Excellence in Chemistry, Indian Institute of Science, Bangalore, India
SO Chemical Physics Letters (1999), 307(3,4), 158-162
CODEN: CHPLBC; ISSN: 0009-2614
PB Elsevier Science B.V.
DT Journal
LA English
AB Aligned nanotube bundles were produced by the pyrolysis of ferrocene along with methane, acetylene, or butane. The nanotube bundles are associated with iron nanoparticles 2-13 nm in diameter These nanoparticles are ferromagnetic, showing low saturation magnetization compared to bulk iron. It is suggested that the ferromagnetism of the transition metal nanoparticles may be responsible for the alignment of the nanotubes. The hydrocarbon used affected the alignment of the bundles. Ferrocene-acetylene mixts. were found to be best among those tested for the production of compact aligned nanotube bundles.
IT 74-82-8, Methane, processes 74-86-2, Acetylene, processes
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(production of bundles of aligned carbon nanotubes by the pyrolysis of ferrocene-hydrocarbon mixts. and the role of metal nanoparticles in their alignment)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

$HC\equiv CH$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Che, G	1998	10	260	Chem Mater	HCAPLUS
De Heer, W	1997	9	87	Adv Mater	HCAPLUS
De Heer, W	1996	270	1179	Science	
Fan, S	1999	283	512	Science	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS

Pan, Z	1999	299	97	Chem Phys Lett	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Sen, R	1997	267	276	Chem Phys Lett	HCAPLUS
Tans, S	1998	393	49	Nature (London)	HCAPLUS
Terrones, M	1998	285	299	Chem Phys Lett	HCAPLUS
Terrones, M	1997	388	52	Nature (London)	HCAPLUS

L98 ANSWER 47 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1998:732885 HCAPLUS Full-text
DN 130:16601
TI Synthesis of large arrays of well-aligned carbon nanotubes on glass
AU Ren, Z. F.; Huang, Z. P.; Xu, J. W.; Wang, J. H.; Bush, P.; Siegel, M. P.; Provencio, P. N.
CS Mater. Synth. Lab., Nat. Sci. Complex, Dep. Phys. Chem., Cent. Adv. Photon. Electron. Mater., State Univ. New York, Buffalo, NY, 14260-3000, USA
SO Science (Washington, D. C.) (1998), 282(5391), 1105-1107
CODEN: SCIEAS; ISSN: 0036-8075
PB American Association for the Advancement of Science
DT Journal
LA English
AB Free-standing aligned carbon nanotubes have previously been grown above 700°C on mesoporous silica embedded with iron nanoparticles. Here, carbon nanotubes aligned over areas up to several square centimeters were grown on nickel-coated glass below 666°C by plasma-enhanced hot filament chemical vapor deposition. Acetylene gas was used as the carbon source and ammonia gas was used as a catalyst and dilution gas. Nanotubes with controllable diams. from 20 to 400 nm and lengths from 0.1 to 50 μm were obtained. Using this method, large panels of aligned carbon nanotubes can be made under conditions that are suitable for device fabrication.
IT 74-86-2, Acetylene, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(carbon source; synthesis of large arrays of well-aligned carbon nanotubes on Ni-coated glass by plasma-enhanced hot filament CVD)
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Charlier, J	1997	275	646	Science	HCAPLUS
Collins, P	1997	278	100	Science	HCAPLUS
de Heer, W	1995	270	1179	Science	HCAPLUS
de Heer, W	1995	268	845	Science	HCAPLUS
Dillon, A	1997	386	377	Nature	HCAPLUS
Ebbesen, T	1997			Carbon Nanotubes: Pr	
Frank, S	1998	280	1744	Science	HCAPLUS
Gadd, G	1997	277	933	Science	HCAPLUS
Huang, Z				in preparation	
Iijima, S	1991	354	56	Nature	HCAPLUS
Journet, C	1997	388	756	Nature	HCAPLUS

Lapp, L				product information	
Li, W	1996	274	1701	Science	HCAPLUS
Liu, J	1998	280	1253	Science	HCAPLUS
Rinzler, A	1995	269	1550	Science	HCAPLUS
Terrones, M	1997	388	52	Nature	HCAPLUS
Thess, A	1996	273	483	Science	HCAPLUS
Wang, Q	1998	72	2912	Appl Phys Lett	HCAPLUS

L98 ANSWER 48 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1997:551293 HCAPLUS Full-text

DN 127:167361

TI Synthesis of carbon nanotubes over supported catalysts

AU Fonseca, A.; Hernadi, K.; Piedigrosso, P.; Biro, L. P.; Lazarescu, S. D.; Lambin, Ph.; Thiry, P. A.; Bernaerts, D.; Nagy, J. B.

CS Institute for Studies in Interface Science, Facultes Universitaires Notre-Dame de la Paix, Namur, B-5000, Belg.

SO Proceedings - Electrochemical Society (1997), 97-14(Recent Advances in the Chemistry and Physics of Fullerenes and Related Materials), 884-906
CODEN: PESODO; ISSN: 0161-6374

PB Electrochemical Society

DT Journal

LA English

AB Catalytic synthesis and physicochem. characterization of multi- and single-wall carbon nanotubes are presented. Supported transition metal catalysts were prepared by different methods and were tested in the production of nanotubes by decomposition of hydrocarbons at 700°C, using a fixed bed flow reactor. The quantities of deposited carbon were measured and the quality of the nanotubes was characterized by means of transmission electron microscopy and scanning tunneling microscopy. The inner and outer diams. of the nanotubes were also measured and the diams. distribution histograms were established. The multi-wall straight and coiled nanotubes were found quite regular with an average inner (outer) diameter of 4-7 nm (15-25 nm) and with lengths up to 50 μm. The walls contain concentric cylindrical graphene sheets separated by the graphitic interlayer distance. Concerning the single-wall nanotubes, they were found as bundles of hundreds of aligned straight 1 nm diameter nanotubes with lengths up to 1 μm. The influence of various parameters such as the way of catalyst preparation, the nature and the pore size of the support, the nature of the metal, the quantity of catalyst active particles and the reaction conditions on the nanotubes formation were studied. Following these results, a model of growth mechanism was suggested for the nanotubes obtained by this method.

IT 74-82-8, Methane, reactions 74-85-1, Ethene, reactions
74-86-2, Acetylene, reactions 115-07-1, Propene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(synthesis of carbon nanotubes over supported catalysts)

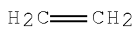
RN 74-82-8 HCAPLUS

CN Methane (CA INDEX NAME)

CH_4

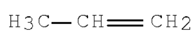
RN 74-85-1 HCAPLUS

CN Ethene (CA INDEX NAME)



RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

RN 115-07-1 HCAPLUS
CN 1-Propene (CA INDEX NAME)



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Ajayan, P	1993	215	509	Chem Phys Lett	HCAPLUS
Ajayan, P	1993	361	333	Nature	HCAPLUS
Ajayan, P	1993	362	522	Nature	HCAPLUS
Ando, Y	1993	32	107	Jpn J Appl Phys	
Bethune, D	1993	363	606	Nature	
Ebbesen, T	1994	24	235	Annu Rev Mater Sci	HCAPLUS
Ebbesen, T	1992	358	220	Nature	HCAPLUS
Ebbesen, T	1994	367	519	Nature	
Fonseca, A	1995	33	1759	Carbon	HCAPLUS
Gal'Pern, E	1993	214	345	Chem Phys Lett	HCAPLUS
Hamada, N	1992	68	1579	Phys Rev Lett	HCAPLUS
Hatta, N	1994	217	398	Chem Phys Lett	HCAPLUS
Hernadi, K	1996	77	31	Synthetic Metals	HCAPLUS
Hernadi, K	1996	17	416	Zeolites	HCAPLUS
Hiura, H	1995	7	275	Advanced Materials	HCAPLUS
Hwang, J	1993	5	643	Adv Mat	HCAPLUS
Iijima, S	1987	91	3466	J Phys Chem	HCAPLUS
Iijima, S	1991	354	56	Nature	HCAPLUS
Iijima, S	1993	363	603	Nature	HCAPLUS
Ivanov, V	1995	33	1727	Carbon	HCAPLUS
Ivanov, V	1994	223	329	Chem Phys Lett	HCAPLUS
Kroto, H	1984	318	162	Nature	
Mintmire, J	1992	68	631	Phys Rev Lett	HCAPLUS
Robertson, D	1992	45	12529	Phys Rev B	
Seraphin, S	1993	31	1212	Carbon	HCAPLUS
Seraphin, S	1993	362	503	Nature	
Smalley, R	1992		161	Proc of The Robert A	HCAPLUS
Somorjai, G	1997	115	389	J Mol Cat A: Chemica	HCAPLUS
Takaba, H	1995	3	449	Microporous Material	HCAPLUS
Tanaka, K	1993	1	137	Fullerene Science &	HCAPLUS
Thess, A	1996	273	483	Science	HCAPLUS

L98 ANSWER 49 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1997:382760 HCAPLUS Full-text
DN 127:112245

TI Well-aligned graphitic nanofibers synthesized by plasma-assisted chemical vapor deposition
AU Chen, Yan; Wang, Zhong Lin; Yin, Jin Song; Johnson, David J.; Prince, R. H.
CS Department of Physics and Astronomy, York University, North York, Ont., Can.
SO Chemical Physics Letters (1997), 272(3,4), 178-182
CODEN: CHPLBC; ISSN: 0009-2614
PB Elsevier
DT Journal
LA English
AB Well-aligned graphitic nanofibers on a large scale have been grown on Ni(100) wafers by plasma-assisted hot filament chemical vapor deposition using a mixed gas of nitrogen and methane. A two-stage control of the plasma intensity has been used in the nucleation and growth stages of the fibers. The growth direction of the fibers is perpendicular to the substrate surface and the plasma-induced Ni particles serve as a catalyst. The diameter of the fibers is in the range 50-500 nm, mostly between 100-200 nm, controlled by the size of the nickel particles. The growth mechanism of the fibers is described based on structural information provided by SEM and transmission electron microscopy.
IT 74-82-8, Methane, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(carbon gas; growth of well-aligned graphitic nanofibers by plasma-assisted hot-filament CVD on Ni(100) wafers using nitrogen-methane mixed gas)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Ajayan, P	1994	265	1212	Science	HCAPLUS
Amelinckx, S	1994	265	635	Science	HCAPLUS
Bacon, R	1960	31	283	J Appl Phys	
Baker, R	1989	27	315	Carbon	HCAPLUS
Bethune, D	1993	363	605	Nature	HCAPLUS
Chen, Y	1996	8	L685	J Phys Condens Matte	HCAPLUS
Chen, Y	1997	75	155	Philos Mag Lett	HCAPLUS
Davis, W	1953	171	756	Nature	HCAPLUS
de Heer, W	1995	268	845	Science	HCAPLUS
Dresselhaus, M	1992	358	195	Nature	
Ebbesen, T	1992	358	220	Nature	HCAPLUS
Endo, M	1993	54	1841	J Phys Chem Solids	HCAPLUS
Hoffer, L	1955	59	1153	J Phys Chem	
Iijima, S	1991	354	56	Nature	HCAPLUS
Iijima, S	1993	69	3100	Phys Rev Lett	
Ivanov, V	1994	223	329	Chem Phys Lett	HCAPLUS
Kim, M	1991	131	60	J Catal	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Matsumoto, M	1982	71	L183	Jpn J Appl Phys	
Mintmire, J	1992	68	631	Phys Rev Lett	HCAPLUS
Oberlin, A	1976	32	335	J Crystal Growth	HCAPLUS

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Wang, Z                 |1996 |74   |51    |Philos Mag B        |HCAPLUS
Yudasaka, M             |1995 |67   |2477  |Appl Phys Lett      |HCAPLUS
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=> d l99 bib abs hitstr retable tot

L99  ANSWER 1 OF 49  HCAPLUS  COPYRIGHT 2008 ACS on STN
AN   2005:1132439  HCAPLUS  Full-text
DN   143:397673
TI   Carbon nanotube nanoelectrode arrays
IN   Ren, Zhifeng; Lin, Yuehe; Yantasee, Wassana; Liu, Guodong; Lu, Fang
PA   The Trustees of Boston College and Battelle Memorial Institute, USA
SO   U.S. Pat. Appl. Publ., 42 pp., Cont.-in-part of U.S. Ser. No. 424,295.
     CODEN: USXXCO
DT   Patent
LA   English
FAN.CNT 2
     PATENT NO.          KIND   DATE       APPLICATION NO.        DATE
     ---------------     ----   --------   --------------------   --------
PI   US 2005230270        A1    20051020   US 2004-17480          20041220 <--
     US 2004058153        A1    20040325   US 2003-424295         20030428 <--
PRAI US 2002-376132P      P     20020429  <--
     US 2003-424295       A2    20030428
AB    The present invention relates to microelectrode arrays (MEAs), and more
      particularly to carbon nanotube nanoelectrode arrays (CNT-NEAs) for chemical
      and biol. sensing, and methods of use.  A nanoelectrode array includes a
      carbon nanotube material comprising an array of substantially linear carbon
      nanotubes each having a proximal end and a distal end, the proximal end of the
      carbon nanotubes are attached to a catalyst substrate material so as to form
      the array with a pre-determined site d., wherein the carbon nanotubes are
      aligned with respect to one another within the array; an elec. insulating
      layer on the surface of the carbon nanotube material, whereby the distal end
      of the carbon nanotubes extend beyond the elec. insulating layer; a second
      adhesive elec. insulating layer on the surface of the elec. insulating layer,
      whereby the distal end of the carbon nanotubes extend beyond the second
      adhesive elec. insulating layer; and a metal wire attached to the catalyst
      substrate material.


L99  ANSWER 2 OF 49  HCAPLUS  COPYRIGHT 2008 ACS on STN
AN   2004:411525  HCAPLUS  Full-text
DN   140:398106
TI   Semiconducting boron-carbon-nitrogen three-component linear
     aligned nanotubes and their manufacture
IN   Banto, Yoshio; Golberg, Dmitri
PA   National Institute for Research In Inorganic Materials, Japan; National
     Institute of Materials Science
SO   Jpn. Kokai Tokkyo Koho, 7 pp.
     CODEN: JKXXAF
DT   Patent
LA   Japanese
FAN.CNT 1
     PATENT NO.          KIND   DATE       APPLICATION NO.        DATE
     ---------------     ----   --------   --------------------   --------
PI   JP 2004142958        A     20040520   JP 2002-306229         20021021 <--
     JP 3616818           B2    20050202
PRAI JP 2002-306229             20021021  <--
AB    The nanotubes are manufactured by reacting carbon nanotubes , B2O3, Au2O3, and
      N at 1500-2500 K.  Preferably, the carbon nanotubes are obtained by CVD.
      Preferably, a high-frequency induction heating furnace is used in the
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manufacture The nanotubes with high resistance to oxidation and heat are suitable for semiconductors, flat panel displays, emitters, heat-resistant fillers, catalysts, etc.

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L99  ANSWER 3 OF 49  HCAPLUS  COPYRIGHT 2008 ACS on STN
AN   2004:289501  HCAPLUS  Full-text
DN   140:312403
TI   Method for alignment of carbon nanotubes by using
     pressure-induced aligned catalysts
IN   Yasui, Kosei; Kasahara, Kenji
PA   Yagisawa, Hitoshi, Japan
SO   Jpn. Kokai Tokkyo Koho, 8 pp.
     CODEN: JKXXAF
DT   Patent
LA   Japanese
FAN.CNT 1
     PATENT NO.          KIND   DATE       APPLICATION NO.        DATE
     ---------------     ----   --------   --------------------   --------
PI   JP 2004107192        A     20040408   JP 2002-307644         20020913 <--
PRAI JP 2002-307644             20020913  <--
AB    The process consists of forming size- and position-controlled catalysts (e.g.,
      Fe, Co) or compound catalysts with substrates on substrates (e.g., Si) with a
      nanoindenter and crystal growth by CVD or MBE from the catalysts as the
      starting points.  Nano-patterned carbon nanotubes are obtained with low cost.


L99  ANSWER 4 OF 49  HCAPLUS  COPYRIGHT 2008 ACS on STN
AN   2004:39571  HCAPLUS  Full-text
DN   140:98103
TI   Ion-beam or laser-induced modification of Fe thin film catalyst
     surface for selective area growth of aligned carbon
     nanotubes
IN   Wee, Thye Shen Andrew; Gohel, Amarsinh; Chin, Kok Chung
PA   Singapore
SO   U.S. Pat. Appl. Publ., 14 pp.
     CODEN: USXXCO
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.          KIND   DATE       APPLICATION NO.        DATE
     ---------------     ----   --------   --------------------   --------
PI   US 2004009115        A1    20040115   US 2003-461251         20030612 <--
     WO 2003106030        A1    20031224   WO 2003-SG146          20030612 <--
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
             GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
             LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM,
             PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT,
             TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
             KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,
             FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,
             BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
     AU 2003248602        A1    20031231   AU 2003-248602         20030612 <--
PRAI US 2002-387920P      P     20020613  <--
     WO 2003-SG146        W     20030612
AB    Catalysts for use in production of carbon nanotubes are prepared by subjecting
      a thin film of a catalytic metal (such as Fe) on a support (such as Si) to
      selective mech. or electromagnetic modification to enhance the grain size of
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the metal. Selective area growth of carbon nanotubes on a substrate bearing a catalyst thin film comprises contacting the modified thin film catalyst with a carbon source (such as hydrocarbons, methane or acetylene) under pressure and temperature conditions which promote carbon nanotube synthesis. The surface-modified deposited carbon nanotubes are suitable for the manufacture of displays (such as field emission displays), electronic and micro-electromech. devices.

IT 74-82-8, Methane, processes 74-85-1, Ethene, processes
74-86-2, Ethyne, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(carbon source; ion-beam or laser-induced modification of Fe thin film catalyst surface for selective area growth of aligned carbon nanotubes)

RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

RN 74-85-1 HCAPLUS
CN Ethene (CA INDEX NAME)

$H_2C=CH_2$

RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

$HC\equiv CH$

L99 ANSWER 5 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2003:697124 HCAPLUS Full-text
DN 139:218043
TI Direct synthesis of long single-walled carbon nanotube strands
IN Ajayan, Pulickel M.; Wei, Bingqing; Zhu, Hongwei; Xu, Cailu; Wu, Dehai
PA Rensselaer Polytechnic Institute, USA; Tsinghua University
SO PCT Int. Appl., 32 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003072859	A1	20030904	WO 2003-US5529	20030224 <--

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,

KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,
FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

CN 1365946	A	20020828	CN 2002-100684	20020222 <--
AU 2003216383	A1	20030909	AU 2003-216383	20030224 <--
PRAI CN 2002-100684	A	20020222 <--		
US 2002-368230P	P	20020328 <--		
WO 2003-US5529	W	20030224		

AB Long, macroscopic nanotube strands or cables, up to several tens of centimeters in length, of aligned single-walled nanotubes are synthesized by the catalytic pyrolysis of n-hexane using an enhanced vertical floating catalyst CVD technique. The long strands of nanotubes assemble continuously from ropes or arrays of nanotubes, which are intrinsically long. These directly synthesized long nanotube strands or cables can be easily manipulated using macroscopic tools.

IT 110-54-3, n-Hexane, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(direct synthesis of long single-walled carbon nanotube strands)

RN 110-54-3 HCAPLUS
CN Hexane (CA INDEX NAME)

Me—$(CH_2)_4$—Me

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Baker	1995			US 5458784 A	HCAPLUS
Cheng	1998	72	3282	Applied Physics Lett	HCAPLUS
Cheng	1998	289	602	Chemcial Physics Let	HCAPLUS
Resasco	2001			US 6333016 B1	HCAPLUS

L99 ANSWER 6 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2003:696100 HCAPLUS Full-text
DN 139:221724
TI Field emission displays, cold cathodes therefor showing uniform emission performance and high field intensity, and manufacture thereof
IN Inoue, Hiroshi; Muroyama, Masakazu
PA Sony Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 19 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003249162	A	20030905	JP 2002-46647	20020222 <--
	JP 3852692	B2	20061206		
PRAI	JP 2002-46647		20020222 <--		

AB The cathodes have, on supports, sequential layers of cathodes and conductive mask layers [of numerical aperture (NA) 10-70%] containing (perpendicularly aligned) nano-sized tubular or fibrous emitters in apertures in good in-plane uniformity. The masks may be coated on surface with catalyst layers (e.g., Ni, Mo, Co, Pt, Fe, their alloys) for CVD growth of the emitters (e.g., carbon). After the CVD, a-C deposited at around emitters may be eliminated by plasma discharge in H(g).

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IT   64-17-5, Ethanol, processes 67-56-1, Methanol, processes
     67-64-1, Acetone, processes 74-82-8, Methane, processes
     74-85-1, Ethylene, processes 74-86-2, Acetylene,
     processes 108-88-3, Toluene, processes
     RL: CPS (Chemical process); PEP (Physical, engineering or
     chemical process); TEM (Technical or engineered material use); PROC
     (Process); USES (Uses)
        (CVD sources; cold cathodes having carbon nano
        -emitters in good in-plane uniformity for field emission displays)
RN   64-17-5  HCAPLUS
CN   Ethanol  (CA INDEX NAME)
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RN   67-56-1  HCAPLUS
CN   Methanol  (CA INDEX NAME)
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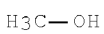

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RN   67-64-1  HCAPLUS
CN   2-Propanone  (CA INDEX NAME)
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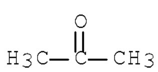

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RN   74-82-8  HCAPLUS
CN   Methane  (CA INDEX NAME)
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RN   74-85-1  HCAPLUS
CN   Ethene  (CA INDEX NAME)
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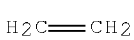

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RN   74-86-2  HCAPLUS
CN   Ethyne  (CA INDEX NAME)
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RN   108-88-3  HCAPLUS
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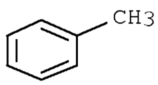
CN Benzene, methyl- (CA INDEX NAME)



L99 ANSWER 7 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2003:610011 HCAPLUS Full-text

DN 139:119375

TI Controlled alignment of catalytically grown nanostructures in a large-scale synthesis process

IN Merkulov, Vladimir I.; Melechko, Anatoli V.; Guillorn, Michael A.; Lowndes, Douglas H.; Simpson, Michael L.

PA UT-Battelle, LLC, USA

SO U.S. Pat. Appl. Publ., 18 pp.
CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003148577	A1	20030807	US 2002-68795	20020206 <--
	US 6958572	B2	20051025		
	WO 2004000003	A2	20031231	WO 2003-US3387	20030205 <--
	WO 2004000003	A3	20050106		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2003269799	A1	20040106	AU 2003-269799	20030205 <--
	EP 1515700	A2	20050323	EP 2003-751736	20030205 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	US 2005170553	A1	20050804	US 2005-89098	20050324 <--
	US 7245068	B2	20070717		
	US 2005167651	A1	20050804	US 2005-89099	20050324 <--
PRAI	US 2002-68795	A	20020206 <--		
	WO 2003-US3387	W	20030205		

AB The invention relates to a method for controlled alignment of catalytically grown nanostructures in a large-scale synthesis process. A method includes: generating an elec. field proximate an edge of a protruding section of an electrode, the elec. field defining a vector; and forming an elongated nanostructure located at a position on a surface of a substrate, the position on the surface of the substrate proximate the edge of the protruding section of the electrode, at least one tangent to the elongated nanostructure substantially parallel to the vector defined by the elec. field and substantially non-parallel to a normal defined by the surface of the substrate.

RETABLE

Referenced Author |Year | VOL | PG | Referenced Work | Referenced

(RAU)	(RPY)	(RVL)	(RPG)	(RWK)	File
Anon	1998			JP 10-203810	HCAPLUS
Anon	1999			WO 9940812	
Anon	2000			WO 00009443	HCAPLUS
Anon	2001			EP 1129990 A1	HCAPLUS
Anon	2001			JP 20-01052598	HCAPLUS
Anyuan Cao	2001	36	2519	Materials Research B	
Awano	2002			US 20020163079 A1	HCAPLUS
Baker	1988	27	315	Carbon	
Bower	2003			US 6630772 B1	HCAPLUS
Chen	2000	76	2469	Applied Physics Lett	HCAPLUS
Cheol Jin Lee	2001	39	1891	Carbon	
Choi	1999	75	3129	Applied Physics Lett	HCAPLUS
Collins	2001	292	706	www.science.org	HCAPLUS
Cuomo	2004			US 6692568 B2	HCAPLUS
Gersonde	2001			US 6183817 B1	HCAPLUS
Guillom	2001		573	Journal of Vacuum Sc	
Jackson	2003			US 6536106 B1	HCAPLUS
Lee	2002			US 6447663 B1	HCAPLUS
Lee	2004			US 6755956 B2	HCAPLUS
Merkulov		79	2970	Applied Physics Lett	HCAPLUS
Merkulov	2000	76	3555	Applied Physics Lett	HCAPLUS
Merkulov	2001	79	1178	Applied Physics Lett	HCAPLUS
Ren	1999	75	1086	Applied Physics Lett	HCAPLUS
Rueckes	2000	289	94	www.science.org	HCAPLUS
Steven	2000	77	3453	Applied Physics Lett	
Yeugang Zhang	2001	79		Applied Physics Lett	

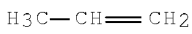
L99 ANSWER 8 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2003:609840 HCAPLUS Full-text
DN 139:166506
TI Process for producing aligned carbon nanotube films
IN Someya, Masao; Fujii, Takashi; Hirata, Masukazu; Horiuchi, Shigeo
PA Mitsubishi Gas Chemical Company, Inc., Japan
SO U.S. Pat. Appl. Publ., 9 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003147801	A1	20030807	US 2002-61218	20020204 <--
	US 6967013	B2	20051122		
	JP 2002338221	A	20021127	JP 2001-372026	20011031 <--
	JP 3912583	B2	20070509		
PRAI	JP 2001-120357	A	20010314 <--		
	JP 2001-372026	A	20011031 <--		

AB A process for producing aligned carbon nanotube films, wherein a carbon compound is decomposed using a substrate (e.g., ceramic sheet) that is coated with an element having no catalytic ability by itself and which loads a metallic element having catalytic ability or a compound thereof, thereby forming a film of fine carbon nanotubes on the surface of the substrate which are aligned in a direction perpendicular to the substrate. The element having no catalytic ability by itself is at least one element of Groups IVA, VA, IIIB and IVB, e.g., Al or Ge. The metallic element having catalytic ability is at least one metallic element of Groups VIA, VIIA and VIII, e.g., Co.

IT 115-07-1, Propylene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(process for producing aligned carbon nanotube

films on a ceramic support)
RN 115-07-1 HCAPLUS
CN 1-Propene (CA INDEX NAME)



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Alkaitis	1981			US 4244938 A	HCAPLUS
Bower	2001			US 6277318 B1	HCAPLUS
Dai	2001			US 6232706 B1	HCAPLUS
Dai	2002			US 6401526 B1	HCAPLUS
Hafner	2002			US 20020112814 A1	
Iijima	1998			US 5747161 A	HCAPLUS
Iijima	1991	354	56	Nature	HCAPLUS
Iwasaki	2001			US 6278231 B1	
Kind	2000	16	6877	Langmuir	HCAPLUS
Lee	2002			US 6350488 B1	HCAPLUS
Lee	2003			US 6514113 B1	HCAPLUS
Lee	2000	323	554	Chemical Physics Let	HCAPLUS
Li	1999	75	367	Applied Physics Lett	HCAPLUS
Li	1996	274	1701	Science	HCAPLUS
Moskovits	2000			US 6129901 A	HCAPLUS
Nature	1998	394	631	Nature	
Ohki	2003			US 6545396 B1	HCAPLUS
Ren	2003			US 20030203139 A1	
Tennent	1987			US 4663230 A	HCAPLUS
Terrones	1997	388	52	Nature	HCAPLUS

L99 ANSWER 9 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2003:421234 HCAPLUS Full-text
DN 138:377530
TI Process for preparing aligned carbon nanotubes and metal nanolines in the nanotubes
IN Shr, Han-Jang; Tsai, Shang-Hua; Jau, Jr-Wei; Li, Jau-Lin
PA Taiwan
SO Taiwan, 4 pp.
CODEN: TWXXA5
DT Patent
LA Chinese
FAN.CNT 1

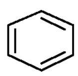
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	TW 444067	B	20010701	TW 1999-88109351	19990605 <--
PRAI	TW 1999-88109351		19990605 <--		

AB Carbon nanotube with internal metallic nanowire is fabricated by using metal-coated metallic compound as a substrate in a microwave plasma and depositing carbon-containing material on its surface by CVD. Multiple carbon nanotubes perpendicular to the substrate are formed on the substrate, with metal nanowire in the nanotube. The metal wire can be transition metal or transition metal alloys. The microwave plasma is characterized by microwave power rating of 100 .apprx. 5000W, pressure of 1+10-3 .apprx. 100 to rr and d.c. bias potential of -50 to -100 v. Pb3Si, cobalt carbide and nickel carbide were used as the metallic nanowire percursor. Ethane, propane, acetylene and

benzene or their mixture were used as precursor for carbon nanotube deposition.

IT 71-43-2, Benzene, reactions 74-84-0, Ethane, reactions 74-86-2, Acetylene, reactions 74-98-6, Propane, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(deposition of carbon nanotubes with internal metallic nanowires.)

RN 71-43-2 HCAPLUS
CN Benzene (CA INDEX NAME)



RN 74-84-0 HCAPLUS
CN Ethane (CA INDEX NAME)

$H_3C—CH_3$

RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

$HC \equiv CH$

RN 74-98-6 HCAPLUS
CN Propane (CA INDEX NAME)

$H_3C—CH_2—CH_3$

L99 ANSWER 10 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2003:376120 HCAPLUS Full-text
DN 138:389465
TI Manufacture of fullerenes, carbon nanotubes and micro-cones using a CVD plasma processing
IN Lynum, Steinar; Hugdahl, Jan; Hox, Ketil; Hildrum, Ragne; Nordvik, Magne
PA Norway
SO U.S. Pat. Appl. Publ., 13 pp., Cont.-in-part of U.S. Ser. No. 400,530, abandoned.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003091495	A1	20030515	US 2002-277134	20021022 <--

PRAI US 1999-400530 B2 19990921 <--

AB The invention relates to a method for producing novel micro-domain graphitic materials by using a plasma process. By micro-domain graphitic material we mean fullerenes, carbon nanotubes, open conical carbon structures (also named micro-cones), preferably flat graphitic sheets, or a mixture thereof. The novel carbon material consists of open carbon micro-cones with total disclination degrees of 60° and/or 120°, corresponding to cone angles of resp. 112.9° and/or 83.6°. Heavy fuel oil was heated to 160° and introduced in the reactor using axial aligned nozzle at a feed rate of 115 kg per h. The reactor pressure was 2 bar. The hydrogen plasma gas feed rate was 450 Nm3/h, while the gross power of supply from the plasma generator was 1005 kW. This resulted in plasma gas enthalpy of 2.2 kWh/Nm3. The time elapsed from the oil was introduced until the polycyclic aromatic hydrocarbons (PAN) left the reactor was approx. 0.16 s. The resulting PAH were reintroduced into the reactor in the plasma-arc zone to produce a micro-domain graphitic material, with a yield >90%.

L99 ANSWER 11 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:823644 HCAPLUS Full-text
DN 138:129693
TI Nitrogen induced structure control of vertically aligned carbon nanotubes synthesized by microwave plasma enhanced chemical vapor deposition
AU Lee, Jeong Young; Lee, Byung Soo
CS Semiconductor Physics Research Center, Department of Semiconductor Science and Technology, Chonbuk National University, Jeonju, 561-756, S. Korea
SO Thin Solid Films (2002), 418(2), 85-88
CODEN: THSFAP; ISSN: 0040-6090
PB Elsevier Science B.V.
DT Journal
LA English
AB Vertically aligned C nanotubes (CNT) were synthesized on Ni/Si substrates using microwave plasma-enhanced CVD, and the effects of N in the gas mixture of $CH_4+H_2+N_2$ on the growth rate and the diameter of the nanotubes were studied. The growth rate and the diameter of CNT were systematically controlled by controlling the N content in the feed gas. With increasing the N content in the feed gas, the growth rate of the nanotubes increased, whereas the diameter decreased except for the case when N was not introduced. A model of roles of N in terms of etching C and Ni catalyst metal was suggested.
IT 74-82-8, Methane, processes
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(precursor; nitrogen induced structure control of vertically aligned carbon nanotubes synthesized by microwave plasma enhanced chemical vapor deposition)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Choi, Y	2000	76	2367	Appl Phys Lett	HCAPLUS

Fan, S	1999	283	512	Science	HCAPLUS
Jin, S	1994	65	403	Appl Phys Lett	HCAPLUS
Journet, C	1997	388	756	Nature	HCAPLUS
Lee, C	1999	75	1721	Appl Phys Lett	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Ma, X	1999	75	3105	Appl Phys Lett	HCAPLUS
Ma, X	2000	77	4136	Appl Phys Lett	HCAPLUS
Ma, X	2001	78	978	Appl Phys Lett	HCAPLUS
Muller-Sebert, W	1996	68	759	Appl Phys Lett	
Ren, Z	1998	282	1105	Science	HCAPLUS
Terrones, M	1997	388	52	Nature	HCAPLUS
Thess, A	1996	273	483	Science	HCAPLUS
Tsang, R	1997	6	247	Diam Relat Mater	HCAPLUS

L99 ANSWER 12 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:820613 HCAPLUS Full-text
DN 138:115585
TI Electric-field-aligned growth of single-walled carbon nanotubes on surfaces
AU Ural, Ant; Li, Yiming; Dai, Hongjie
CS Department of Chemistry and Laboratory for Advanced Materials, Stanford University, Stanford, CA, 94305, USA
SO Applied Physics Letters (2002), 81(18), 3464-3466
CODEN: APPLAB; ISSN: 0003-6951
PB American Institute of Physics
DT Journal
LA English
AB Aligned single-walled C nanotubes are grown onto the surfaces of SiO2/Si substrates in elec. fields established across patterned metal electrodes. Calcns. of the elec. field distribution under the designed electrode structures, the directing ability of elec. fields, and the prevention of surface van der Waals interactions were used to rationalize the aligned growth. The capability of synthesizing oriented single-walled nanotubes on surfaces shall open up many opportunities in organized architectures of nanotubes for mol. electronics.
IT 74-82-8, Methane, processes 74-85-1, Ethylene, processes
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(precursor; elec.-field-aligned growth of single-walled carbon nanotubes on surfaces of silica/silicon substrates)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

RN 74-85-1 HCAPLUS
CN Ethene (CA INDEX NAME)

$H_2C=CH_2$

RETABLE

Referenced Author	Year	VOL	PG	Referenced Work	Referenced

(RAU)	(RPY)	(RVL)	(RPG)	(RWK)	File
Benedict, L	1995	52	8541	Phys Rev B	HCAPLUS
Dai, H	2001	80	29	Carbon Nanotubes	HCAPLUS
Dai, H	2002	500	218	Surf Sci	HCAPLUS
Diehl, M	2001	41	353	Angew Chem Int Ed En	
Franklin, N	2002	81	913	Appl Phys Lett	HCAPLUS
Kong, J	1998	395	878	Nature (London)	HCAPLUS
Li, Y	2001	105	11424	J Phys Chem	HCAPLUS
Tombler, T	2000	405	769	Nature (London)	HCAPLUS
Zhang, Y	2001	79	3155	Appl Phys Lett	HCAPLUS

L99 ANSWER 13 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:679674 HCAPLUS Full-text
DN 137:356842
TI Formation of carbon nanofiber films by RF magnetron sputtering method
AU Honda, S.; Lee, K.-Y.; Fujimoto, K.; Tsuji, K.; Ohkura, S.; Katayama, M.; Hirao, T.; Oura, K.
CS Graduate School of Engineering, Department of Electronic Engineering, Osaka University, Suita, Osaka, 565-0871, Japan
SO Physica B: Condensed Matter (Amsterdam, Netherlands) (2002), 323(1-4), 347-349
CODEN: PHYBE3; ISSN: 0921-4526
PB Elsevier Science B.V.
DT Journal
LA English
AB Carbon nanofiber thin films were successfully grown by the unique method of RF magnetron sputtering with hot filament which enables us to control the alignment, diameter, and d. of the nanofiber.
RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Avigal, Y	2001	78	2291	Appl Phys Lett	HCAPLUS
Fan, S	2000	8	179	Physica E	HCAPLUS
Iijima, S	1991	354	56	Nature	HCAPLUS

L99 ANSWER 14 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:638162 HCAPLUS Full-text
DN 137:161728
TI Process for controlled introduction of defects in elongated nanostructures
IN Bower, Christopher A.; Jin, Sungho; Zhu, Wei
PA USA
SO U.S. Pat. Appl. Publ., 17 pp., Cont.-in-part of U.S. Ser. No. 512,873.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	US 2002114949	A1	20020822	US 2002-74128	20020212	<--
	CA 2331278	A1	20010825	CA 2001-2331278	20010117	<--
	JP 2001262343	A	20010926	JP 2001-45300	20010221	<--
PRAI	US 2000-512873	A2	20000225	<--		

AB The invention provides a process capable of providing elongated nanostructures conformably aligned perpendicular to the local surface, while also allowing control over the diameter, length, and location. The process also permits controllably introducing defects at desired locations along the length.

Conformably aligned straight sections are grown under the influence of an elec. field and curly defect regions are grown after switching off the field. A preferred embodiment uses high frequency plasma enhanced CVD (PECVD), typically with microwave-ignited plasma. The extraordinarily high extent of conformal alignment-on both flat and nonflat surfaces-appears to be due to the elec. self-bias imposed on the substrate by the plasma, the field line of which is perpendicular to the substrate surface. In addition to the conformal orientation, by selecting a particular thickness for the catalyst layer, it was possible to obtain nanotubes of a desired diameter, while the length of the nanostructure is determined by the duration of the PECVD process. And, by patterning the catalyst metal, it is possible to form nanostructures in particular locations on a substrate.

IT 74-86-2, Acetylene, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(process for controlled introduction of defects in elongated nanostructures)

RN 74-86-2 HCAPLUS

CN Ethyne (CA INDEX NAME)

L99 ANSWER 15 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2002:631325 HCAPLUS Full-text

DN 137:327043

TI Rapid growth of well-aligned carbon nanotube arrays

AU Zhang, Xianfeng; Cao, Anyuan; Wei, Bingqing; Li, Yanhui; Wei, Jinquan; Xu, Cailu; Wu, Dehai

CS State Key Laboratory of Auto. Safety and Energy, Department of Mechanical Engineering, Tsinghua University, Beijing, 100084, Peop. Rep. China

SO Chemical Physics Letters (2002), 362(3,4), 285-290
CODEN: CHPLBC; ISSN: 0009-2614

PB Elsevier Science B.V.

DT Journal

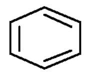
LA English

AB Vertically aligned carbon nanotube arrays with high d. were synthesized on large-area (100 + 40 mm2) quartz substrates by catalytic decomposition of a ferrocene-xylene mixture at 850° in a quartz tube reactor. The nanotubes grow at a high growth rate of .apprx.50 μm/min, and reach 1.5 mm in length in 30 min. SEM and transmission electron microscopy investigations reveal that the nanotubes are high-purity multi-wall carbon nanotubes with well-ordered graphene sheets, and about 30-60 nm in diameter This provides a simple way to synthesize well-aligned carbon nanotubes in large areas. A continuous rapid growth model is suggested for the carbon nanotubes obtained by high growth rate under our exptl. conditions.

IT 1330-20-7, Xylene, reactions
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(rapid growth of well-aligned carbon nanotube arrays by catalytic decomposition of ferrocene-xylene mixture)

RN 1330-20-7 HCAPLUS

CN Benzene, dimethyl- (CA INDEX NAME)



2 (D1— Me)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Andrews, R	1999	303	467	Chem Phys Lett	HCAPLUS
Bower, C	2000	77	830	Appl Phys Lett	HCAPLUS
Cao, A	2001	39	152	Carbon	HCAPLUS
Cao, A	2001	335	150	Chem Phys Lett	HCAPLUS
Cao, A	2001	342	510	Chem Phys Lett	HCAPLUS
de Heer, W	1995	270	1179	Science	HCAPLUS
de Heer, W	1995	268	845	Science	HCAPLUS
Delaney, P	1998	391	466	Nature	HCAPLUS
Dillon, A	1997	386	377	Nature	HCAPLUS
Ebbesen, T	1997		191	Carbon Nanotubes: Pr	
Ebbesen, T	1996	382	54	Nature	HCAPLUS
Fan, S	1999	283	512	Science	HCAPLUS
Iijima, S	1991	354	56	Nature	HCAPLUS
Kong, J	2000	287	622	Science	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Pan, Z	1998	394	631	Nature	HCAPLUS
Rao, C	1998	15	1525	Chem Commun	
Ren, Z	1998	282	1105	Science	HCAPLUS
Rinzler, A	1995	269	1550	Science	HCAPLUS
Terrones, M	1997	388	52	Nature	HCAPLUS

L99 ANSWER 16 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:581027 HCAPLUS Full-text
DN 137:313047
TI Carbon nanotubes produced by tungsten-based catalyst using vapor phase deposition method
AU Lee, Cheol Jin; Lyu, Seung Chul; Kim, Hyoun-Woo; Park, Jong Wan; Jung, Hyun Min; Park, Jaiwook
CS Department of Nanotechnology, Hanyang University, Seongdong-gu, Seoul, 133-791, S. Korea
SO Chemical Physics Letters (2002), 361(5,6), 469-472
CODEN: CHPLBC; ISSN: 0009-2614
PB Elsevier Science B.V.
DT Journal
LA English
AB We have demonstrated that W-based catalysts can produce carbon nanotubes effectively. Well-aligned, high-purity carbon nanotubes were synthesized using the catalytic reaction of C_2H_2 and $W(CO)_6$ mixts. The carbon nanotubes had a multiwalled structure with a hollow inside. The graphite sheets of carbon nanotubes were highly crystalline but the outmost graphite sheets were defective.
IT 74-86-2, Acetylene, reactions
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(production of carbon nanotubes from acetylene using

tungsten-based catalyst by vapor phase deposition method)
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Andersson, M	2000	15	1822	J Mater Res	HCAPLUS
Andrews, R	1999	303	467	Chem Phys Lett	HCAPLUS
Bethune, D	1993	363	605	Nature	HCAPLUS
Cao, A	2001	335	150	Chem Phys Lett	HCAPLUS
Chen, P	1999	285	91	Science	HCAPLUS
Cheng, H	1998	289	602	Chem Phys Lett	HCAPLUS
Dai, H	1996	260	471	Chem Phys Lett	HCAPLUS
Dai, H	1996	384	147	Nature	HCAPLUS
DePablo, P	1999	74	323	Appl Phys Lett	HCAPLUS
de Heer, W	1995	270	1179	Science	HCAPLUS
Fan, S	1999	283	512	Science	HCAPLUS
Harris, P	1999			Carbon Nanotubes and	
Iijima, S	1991	354	56	Nature	HCAPLUS
Kiang, C	1996	57	35	J Phys Chem Solids	HCAPLUS
Lee, C	1999	75	1721	Appl Phys Lett	HCAPLUS
Lee, C	2000	326	175	Chem Phys Lett	HCAPLUS
Lee, C	2001	338	113	Chem Phys Lett	HCAPLUS
Lee, C	2002	359	109	Chem Phys Lett	HCAPLUS
Lefrant, S	1999	101	184	Synth Met	HCAPLUS
Liu, C	1999	286	1127	Science	HCAPLUS
Mayne, M	2001	338	101	Chem Phys Lett	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Rohmund, F	2000	328	369	Chem Phys Lett	HCAPLUS
Saito, Y	1998	294	593	Chem Phys Lett	HCAPLUS
Saito, Y	1997	389	554	Nature	HCAPLUS
Satishkumar, B	1999	307	158	Chem Phys Lett	HCAPLUS
Sen, R	1997	267	276	Chem Phys Lett	HCAPLUS
Seraphin, S	1994	64	2087	Appl Phys Lett	HCAPLUS
Takizawa, M	2000	326	351	Chem Phys Lett	HCAPLUS
Wal, R	2001	39	2277	Carbon	
Wei, Y	2000	76	3759	Appl Phys Lett	HCAPLUS
Zhang, Y	1999	187	213	Appl Catal A	HCAPLUS

L99 ANSWER 17 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:580994 HCAPLUS Full-text
DN 138:94048
TI Growth rate of plasma-synthesized vertically aligned carbon nanofibers
AU Merkulov, Vladimir I.; Melechko, A. V.; Guillorn, M. A.; Lowndes, D. H.; Simpson, M. L.
CS Molecular Scale Engineering and Nanoscale Technologies Research Group, Oak Ridge National Laboratory, Oak Ridge, TN, 37831, USA
SO Chemical Physics Letters (2002), 361(5,6), 492-498
CODEN: CHPLBC; ISSN: 0009-2614
PB Elsevier Science B.V.
DT Journal
LA English

AB Vertically aligned carbon nanofibers (VACNFs) were synthesized by d.c. plasma enhanced chemical vapor deposition using acetylene and ammonia as the gas source. The mechanisms responsible for changing the nanofiber growth rate were studied and phenomenol. models are proposed. The feedstock for VACNF growth is suggested to consist mainly of radicals formed in the plasma and not the unexcited acetylene gas mols. The growth rate is shown to increase dramatically by changing the radical transport mechanism from diffusive to forced flow, which was accomplished by increasing the gas flow in the direction perpendicular to the substrate.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Alstrup, I	1988	109	241	J Catalysis	HCAPLUS
Baker, R	1989	27	315	Carbon	HCAPLUS
Baker, R	1980	64	464	J Catalysis	HCAPLUS
Bower, C	2000	77	2767	Appl Phys Lett	HCAPLUS
Bower, C	2000	77	830	Appl Phys Lett	HCAPLUS
Chhowalla, M	2001	90	5308	J Appl Phys	HCAPLUS
Cui, H	2000	88	6072	J Appl Phys	HCAPLUS
Delzeit, L	2002	91	6027	J Appl Phys	HCAPLUS
Guillorn, M	2001	79	3506	Appl Phys Lett	HCAPLUS
Guillorn, M	2002	91	3824	J Appl Phys	HCAPLUS
Huang, Z	1998	73	3845	Appl Phys Lett	HCAPLUS
Jensen, F	1997			Plasma-enhanced Chem	
Merkulov, V	2000	76	3555	Appl Phys Lett	HCAPLUS
Merkulov, V	2001	79	1178	Appl Phys Lett	HCAPLUS
Merkulov, V	2001	79	2970	Appl Phys Lett	HCAPLUS
Merkulov, V	2001	80	476	Appl Phys Lett	
Merkulov, V	2002	80	4816	Appl Phys Lett	HCAPLUS
Merkulov, V	2001	350	381	Chem Phys Lett	HCAPLUS
Merkulov, V				J Phys Chem B submit	
Nolan, D	1998	102	4165	J Phys Chem B	
Pirio, G	2001	13	1	Nanotechnology	
Ren, Z	1998	282	1105	Science	HCAPLUS
Teo, K	2001	79	1534	Appl Phys Lett	HCAPLUS

L99 ANSWER 18 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:474524 HCAPLUS Full-text
DN 137:171827
TI Large-scale production of aligned carbon nanotubes by the vapor phase growth method
AU Lee, Cheol Jin; Lyu, Seung Chul; Kim, Hyoun-Woo; Park, Chong-Yun; Yang, Cheol-Woong
CS Department of Nanotechnology, Hanyang University, Seongdong-gu, Seoul, 133-791, S. Korea
SO Chemical Physics Letters (2002), 359(1,2), 109-114
CODEN: CHPLBC; ISSN: 0009-2614
PB Elsevier Science B.V.
DT Journal
LA English
AB Aligned multiwalled carbon nanotubes have been massively synthesized by pyrolysis of iron pentacarbonyl and acetylene mixts. in a simply designed horizontal quartz tube reactor. The growth rate and the crystallinity of carbon nanotubes were enhanced by increasing the flow rate of Ar carrier gas. The growth rate, by adopting acetylene direct bubbling, was dramatically increased compared with Ar direct bubbling; maximum length of 2000 μm was achieved.
IT 74-86-2, Acetylene, reactions
RL: CPS (Chemical process); PEP (Physical, engineering or

chemical process); RCT (Reactant); PROC (Process);
RACT (Reactant or reagent)
(large-scale production of aligned carbon nanotubes by vapor phase growth method using)

RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Andrews, R	1999	303	467	Chem Phys Lett	HCAPLUS
Bethune, D	1998	391	466	Nature	
Chen, P	1999	285	91	Science	HCAPLUS
Cheng, H	1998	289	602	Chem Phys Lett	HCAPLUS
Dai, H	1996	384	147	Nature	HCAPLUS
de Heer, W	1995	270	1179	Science	HCAPLUS
Delaney, P	1998	391	466	Nature	HCAPLUS
Fan, S	1999	283	512	Science	HCAPLUS
Iijima, S	1991	354	56	Nature	HCAPLUS
Journet, C	1997	388	756	Nature	HCAPLUS
Kamalakaran, R	2000	77	3385	Appl Phys Lett	HCAPLUS
Lee, C	1999	312	461	Chem Phys Lett	HCAPLUS
Lee, C	2000	323	560	Chem Phys Lett	HCAPLUS
Liu, C	1999	286	1127	Science	HCAPLUS
Mayne, M	2001	338	101	Chem Phys Lett	HCAPLUS
Pan, Z	1998	394	632	Nature	
Qin, L	1998	72	3437	Appl Phys Lett	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Rohmund, F	2000	328	369	Chem Phys Lett	HCAPLUS
Saito, Y	1997	389	554	Nature	HCAPLUS
Satishkumar, B	1999	307	158	Chem Phys Lett	HCAPLUS
Sen, R	1997	267	276	Chem Phys Lett	HCAPLUS
Terrones, M	1997	388	52	Nature	HCAPLUS
Thess, A	1996	273	483	Science	HCAPLUS
Treacy, M	1996	381	678	Nature	HCAPLUS
Tuinstra, F	1970	53	1126	J Chem Phys	HCAPLUS
Whitney, T	1993	261	1316	Science	HCAPLUS

L99 ANSWER 19 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:473703 HCAPLUS Full-text
DN 137:225092
TI Oxygen and ozone oxidation-enhanced field emission of carbon nanotubes
AU Kung, Sheng-Chin; Hwang, Kuo Chu; Lin, I. Nan
CS Department of Chemistry, National Tsing Hua University, Hsinchu, Taiwan
SO Applied Physics Letters (2002), 80(25), 4819-4821
CODEN: APPLAB; ISSN: 0003-6951
PB American Institute of Physics
DT Journal
LA English
AB Vertically aligned carbon nanotube (CNT) arrays were grown on p-type silicon wafer using acetylene and iron phthalocyanine as the sources of hydrocarbons and catalysts, resp. The CNT arrays were treated by chemical reagents, such as oxygen (O2), ozone (O3), bromine, and acids. When treated by O2 and O3,

the emission current of the CNT array was increased .apprx.800% along with a decrease of the onset field emission voltage from 0.8 to 0.6 V/μm. Other chemical treatments, e.g., bromination and acid oxidation, lead to poorer field emission performance. The effects of these chemical processes on the field emission properties of CNT arrays will be discussed.

IT 74-86-2, Acetylene, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(growing of vertically aligned carbon nanotube arrays on p-type silicon wafer using acetylene and iron phthalocyanine as hydrocarbon source and catalyst)

RN 74-86-2 HCAPLUS

CN Ethyne (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon				http://www.aip.org/p	
Bonard, J	1999	A69	245	Appl Phys A: Mater S	
Choi, W	2000	39	2560	Jpn J Appl Phys Part	HCAPLUS
Chung, D	2000	18	1054	J Vac Sci Technol B	HCAPLUS
Chung, D	2000	18	1054	J Vac Sci Technol B	HCAPLUS
de Heer, W	1995	270	1179	Science	HCAPLUS
Deng, J	1997	5	1033	Fullerene Sci Techno	HCAPLUS
Fan, S	1999	283	512	Science	HCAPLUS
Hernadi, K	2001	141-1	203	Solid State Ionics	HCAPLUS
Huang, S	1999	103	4223	J Phys Chem B	HCAPLUS
Kwo, J	2000	9	1270	Diamond Relat Mater	HCAPLUS
Lee, C	1999	312	461	Chem Phys Lett	HCAPLUS
Lee, C	2000	326	175	Chem Phys Lett	HCAPLUS
Lee, C	2000	323	554	Chem Phys Lett	HCAPLUS
Lee, R	1997	388	255	Nature	HCAPLUS
Li, D	2000	76	3813	Chem Phys Lett	
Li, W	1997	70	2684	Appl Phys Lett	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Murray, R	1968	1	313	Acc Chem Res	HCAPLUS
Pan, Z	1999	299	97	Chem Phys Lett	HCAPLUS
Pan, Z	2001	105	1519	J Phys Chem B	HCAPLUS
Rao, A	2000	76	3813	Appl Phys Lett	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Rinzler, A	1995	269	1550	Science	HCAPLUS
Sung, S	1999	74	197	Appl Phys Lett	HCAPLUS
Tsai, S	1999	74	3462	Appl Phys Lett	HCAPLUS
Wang, W	1997	70	3308	Appl Phys Lett	
Yang, Y	1999	121	10832	J Am Chem Soc	HCAPLUS
Yoshida, Y	2000	122	7244	J Am Chem Soc	HCAPLUS

L99 ANSWER 20 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2002:473702 HCAPLUS Full-text

DN 137:97484

TI Controlled alignment of carbon nanofibers in a large-scale synthesis process

AU Merkulov, Vladimir I.; Melechko, A. V.; Guillorn, M. A.; Simpson, M. L.;

Lowndes, D. H.; Whealton, J. H.; Raridon, R. J.
CS Molecular Scale Engineering and Nanoscale Technologies (MENT), Oak Ridge National Laboratory, Oak Ridge, TN, 37831, USA
SO Applied Physics Letters (2002), 80(25), 4816-4818
CODEN: APPLAB; ISSN: 0003-6951
PB American Institute of Physics
DT Journal
LA English
AB Controlled alignment of catalytically grown carbon nanofibers (CNFs) at a variable angle to the substrate during a plasma-enhanced chemical vapor deposition process is achieved. The CNF alignment is controlled by the direction of the elec. field lines during the synthesis process. Off normal CNF orientations are achieved by positioning the sample in the vicinity of geometrical features of the sample holder, where bending of the elec. field lines occurs. The controlled growth of kinked CNFs that consist of two parts aligned at different angles to the substrate normal also is demonstrated.
RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Baker, R	1989	27	315	Carbon	HCAPLUS
Bower, C	2000	77	830	Appl Phys Lett	HCAPLUS
Chen, Y	2000	76	2469	Appl Phys Lett	HCAPLUS
Chhowala, M	2001	90	5308	J Appl Phys	
Choi, W	1999	75	3129	Appl Phys Lett	HCAPLUS
Collins, P	2001	292	706	Science	HCAPLUS
Guillorn, M	2001	79	3506	Appl Phys Lett	HCAPLUS
Guillorn, M	2002	91	3824	J Appl Phys	HCAPLUS
Harris, P	1999			Carbon Nanotubes and	
Merkulov, V	2000	76	3555	Appl Phys Lett	HCAPLUS
Merkulov, V	2001	79	1178	Appl Phys Lett	HCAPLUS
Merkulov, V	2001	79	2970	Appl Phys Lett	HCAPLUS
Merkulov, V	2002	80	476	Appl Phys Lett	HCAPLUS
Merkulov, V	2001	350	381	Chem Phys Lett	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Rueckes, T	2000	289	94	Science	HCAPLUS
Snow, E	2002	80	2002	Appl Phys Lett	HCAPLUS
Zhang, Y	2001	79	3155	Appl Phys Lett	HCAPLUS

L99 ANSWER 21 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:436050 HCAPLUS Full-text
DN 137:128615
TI Tubes on tube - a novel form of aligned carbon nanotubes
AU Tsai, Shang-Hua; Shiu, Chen-Tien; Lai, Shih-Hsiang; Shih, Han-Chang
CS Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, 300, Taiwan
SO Carbon (2002), 40(9), 1597-1600
CODEN: CRBNAH; ISSN: 0008-6223
PB Elsevier Science Ltd.
DT Journal
LA English
AB The synthesis of highly oriented and multi-branched C nanotubes on Pd deposited Si substrates by microwave plasma enhanced chemical vapor deposition is reported. CH_4 gas is used to provide C for the nanotube growth and H_2 is the diluent medium. This synthesis has tremendous potential for nanotechnol., since the fabrication of connections between two or more different C nanotubes is an important step in the development of C nanotube-based electronic devices and circuits.
IT 74-82-8, Methane, processes
RL: CPS (Chemical process); NUU (Other use, unclassified);

PEP (Physical, engineering or chemical process); PROC (Process);
USES (Uses)
(microwave plasma-enhanced CVD of carbon nanotubes)

RN 74-82-8 HCAPLUS

CN Methane (CA INDEX NAME)

CH_4

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Choi, W	1999	75	3129	Appl Phys Lett	HCAPLUS
Collins, P	1997	278	100	Science	HCAPLUS
Deheer, W	1995	270	1179	Science	HCAPLUS
Falvo, M	1997	389	582	Nature (London)	MEDLINE
Fan, S	1999	283	512	Science	HCAPLUS
Li, J	1999	402	253	Nature (London)	HCAPLUS
Mao, J	1998	72	3297	Appl Phys Lett	HCAPLUS
Nagy, P	2000	70	481	Appl Phys A	HCAPLUS
Rao, A	2000	76	3813	Appl Phys Lett	HCAPLUS
Treacy, M	1996	381	678	Nature (London)	HCAPLUS
Treboux, G	1999	103	10378	J Phys Chem B	HCAPLUS
Tsai, S	1999	74	3462	Appl Phys Lett	HCAPLUS
Tsai, S	2000	38	1899	Carbon	HCAPLUS
Wang, Z	1998	102	6145	J Phys Chem B	HCAPLUS
Zhou, D	1995	238	286	Chem Phys Lett	
Zhu, W	1999	75	873	Appl Phys Lett	HCAPLUS

L99 ANSWER 22 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2002:412822 HCAPLUS Full-text

DN 137:9655

TI Carbon nanotube synthesis using mesoporous silica templates

AU Zheng, Feng; Liang, Liang; Gao, Yufei; Sukamto, Johanes H.; Aardahl, Christopher L.

CS Pacific Northwest National Laboratory, Richland, WA, 99352, USA

SO Nano Letters (2002), 2(7), 729-732
CODEN: NALEFD; ISSN: 1530-6984

PB American Chemical Society

DT Journal

LA English

AB Well-aligned carbon nanotubes (CNTs) were grown on mesoporous silica films by CVD. Ethylene was used as the carbon source and CVD was performed at 1023 K and atmospheric pressure. The films were doped with Fe during sol-gel synthesis, and 3 different structure directing agents were used for mesoporous silica preparation: polyoxyethylene (10) cetyl ether (C16EO10), Pluronic tri-block copolymer (P123), and cetyltriethylammonium chloride (CTAC). A high degree of CNT alignment on C16EO10 mesoporous silica films was produced at Fe:Si molar ratio of 1:80. Similar alignment of CNTs was achieved in the other prepns., but on CTAC-derived films CNTs only grew parallel to the substrate surface because the in-plane arrangement of the pore structure limited CNT growth to crack domains. The diameter of the CNTs can be controlled by changing the Fe concentration in the mesoporous silica substrate.

IT 74-85-1, Ethylene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(in preparation of carbon nanotubes by CVD using mesoporous silica

templates)
RN 74-85-1 HCAPLUS
CN Ethene (CA INDEX NAME)

$H_2C{=}CH_2$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Cassell, A	2001	17	260	Langmuir	HCAPLUS
Kukovecz, A	2000	2	3071	Phys Chem Chem Phys	HCAPLUS
Kyotani, T	1996	8	2109	Chem Mater	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Raman, N	1996	8	1682	Chem Mater	HCAPLUS
Xie, S	2000	61	1153	J Phys Chem Solids	HCAPLUS
Xie, S	2000	A286	11	Mater Sci Eng	HCAPLUS
Yang, H	1996	379	703	Nature	HCAPLUS
Zhang, W	1999	9	1803	Chem Commun	
Zhao, D	1998	120	6024	J Am Chem Soc	HCAPLUS
Zheng, G	2001	13	2240	Chem Mater	HCAPLUS

L99 ANSWER 23 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:357823 HCAPLUS Full-text
DN 137:81010
TI Direct synthesis of long single-walled carbon nanotube strands
AU Zhu, H. W.; Xu, C. L.; Wu, D. H.; Wei, B. Q.; Vajtai, R.; Ajayan, P. M.
CS Department of Mechanical Engineering, Tsinghua University, Beijing, 100084, Peop. Rep. China
SO Science (Washington, DC, United States) (2002), 296(5569), 884-886
CODEN: SCIEAS; ISSN: 0036-8075
PB American Association for the Advancement of Science
DT Journal
LA English
AB In the processes that are used to produce single-walled nanotubes (elec. arc, laser ablation, and chemical vapor deposition), the typical lengths of tangled nanotube bundles reach several tens of micrometers. We report that long nanotube strands, up to several centimeters in length, consisting of aligned single-walled nanotubes can be synthesized by the catalytic pyrolysis of n-hexane with an enhanced vertical floating technique. The long strands of nanotubes assemble continuously from arrays of nanotubes, which are intrinsically long.
IT 110-54-3, n-Hexane, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(direct synthesis of long single-walled carbon nanotube strands by catalytic pyrolysis of n-hexane)
RN 110-54-3 HCAPLUS
CN Hexane (CA INDEX NAME)

$Me-(CH_2)_4-Me$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Andrews, R	1999	303	467	Chem Phys Lett	HCAPLUS
Baughman, R	1999	284	1340	Science	HCAPLUS
Cheng, H	1998	72	3282	Appl Phys Lett	HCAPLUS
Cheng, H	1998	289	602	Chem Phys Lett	HCAPLUS
Ci, L	2000	38	1933	Carbon	HCAPLUS
Endo, M	1993	54	1841	J Phys Chem Solids	HCAPLUS
Fischer, J	1997	55	R4921	Phys Rev B	HCAPLUS
Forro, L	2001		329	Carbon Nanotubes:Syn	HCAPLUS
Iijima, S	1991	354	56	Nature	HCAPLUS
Launois, P	2001	1	125	J Nanosci Nanotechno	HCAPLUS
Li, F	2000	77	3161	Appl Phys Lett	HCAPLUS
Lu, J	1997	79	1297	Phys Rev Lett	HCAPLUS
Pan, Z	1998	394	631	Nature	HCAPLUS
Rols, R	1999	10	263	Eur Phys J B	
Thess, A	1996	273	483	Science	HCAPLUS
Treacy, M	1996	381	678	Nature	HCAPLUS
Vigolo, B	2000	290	1331	Science	HCAPLUS
Wong, E	1997	277	1971	Science	HCAPLUS
Yu, M	2000	84	5552	Phys Rev Lett	HCAPLUS
Zhang, P	1998	81	5346	Phys Rev Lett	HCAPLUS

L99 ANSWER 24 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:257135 HCAPLUS Full-text
DN 136:313802
TI Well-aligned carbon nanofibers synthesized by electron cyclotron resonance chemical vapor deposition
AU Hoshi, Fumiyuki; Tsugawa, Kazuo; Goto, Akiko; Ishikura, Takefumi; Yamashita, Satoshi; Yumura, Motoo; Hirao, Takashi; Fujiwara, Shuzou; Koga, Yoshinori
CS FCT Research Laboratory, JFCC, NIMC, Japan
SO Materials Research Society Symposium Proceedings (2001), 633(Nanotubes and Related Materials), A6.2.1-A6.2.6
CODEN: MRSPDH; ISSN: 0272-9172
PB Materials Research Society
DT Journal
LA English
AB Aligned carbon nanofibers and hollow carbon nanofibers were grown by MW ECR-CVD method using methane and argon mixture gas at the temperature of 550°C. Carbon nanofibers and hollow carbon nanofibers were deposited perpendicularly on Si substrate and on Si substrate coated with Ni catalyst, resp. Raman spectra of aligned carbon nanofibers and hollow carbon nanofibers showed new bands of 1340 and 1612 cm-1 of the first-order Raman scattering and 2660, 2940 and 3220 cm-1 of the second-order Raman scattering. The second-order Raman scattering bands were assigned to two overtone and one combination bands on the basis of a similar assignment of micro crystal graphite. Combination bands are unusually intense. Field emitter characteristics of the well-aligned carbon nanofibers and hollow carbon nanofibers were investigated and the current densities were 7.25 mA/cm2 and 0.69 mA/cm2 at 12.5 V/μm, resp.
RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Baker, F	1974	7	2105	J Phys D	HCAPLUS
Endo, F	1999	14	4474	J Mater Res	
Ferrari, A	2000	B61	14095	Phys Rev	
Iijima, S	1991	354	56	Nature	HCAPLUS
Nemanich, R	1978	B20	392	Phys Rev	

Rao, A	1977	275	187	Science	
Saito, Y	1998	A67	95	Appl Phys	
Tan, P	1977	28	369	J Raman Spectr	

L99 ANSWER 25 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:218975 HCAPLUS Full-text
DN 136:333701
TI Micropatterned vertically aligned carbon-nanotube growth on a Si surface or inside trenches
AU Sohn, Jung Inn; Lee, Seonghoon
CS Department of Materials Science and Engineering, Kwangju Institute of Science and Technology (K-JIST), Kwangju, 500-712, S. Korea
SO Applied Physics A: Materials Science & Processing (2002), 74(2), 287-290
CODEN: APAMFC; ISSN: 0947-8396
PB Springer-Verlag
DT Journal
LA English
AB The good field-emission properties of C nanotubes coupled with their high mech. strength, chemical stability, and high aspect ratio, make them ideal candidates for the construction of efficient and inexpensive field-emission electronic devices. The fabrication process reported here has considerable potential for use in the development of integrated radiofrequency amplifiers or field-emission-controllable cold-electron guns for field-emission displays. This fabrication process is compatible with currently used semiconductor-processing technologies. Micropatterned vertically aligned C nanotubes were grown on a planar Si surface or inside trenches, using CVD, photolithog., pulsed-laser deposition, reactive ion etching, and the lift-off method. This C- nanotube fabrication process can be widely applied for the development of electronic devices using C-nanotube field emitters as cold cathodes and could revolutionize the area of field-emitting electronic devices.
IT 74-86-2, Acetylene, processes
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(for micropatterned vertically aligned carbon-nanotube growth on silicon surface or inside trenches for field emitters)
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

$HC\equiv CH$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Brodie, I	1995	38	541	Int J Electron	
Choi, W	1999	75	3129	Appl Phys Lett	HCAPLUS
de Heer, W	1995	270	1179	Science	HCAPLUS
Fan, S	1999	283	512	Science	HCAPLUS
Liu, C	1999	286	1127	Science	HCAPLUS
Rao, A	2000	76	3813	Appl Phys Lett	HCAPLUS
Ren, Z	1998	282	110	Science	
Rinzler, A	1995	269	1550	Science	HCAPLUS
Ruoff, R	1995	33	925	Carbon	HCAPLUS
Saito, R	1999			Physical Properties	

Sohn, J	2001	78	901	Appl Phys Lett	HCAPLUS
Spindt, C	1997		200	Tech Dig IVMC '97	
Suh, J	1999	75	2047	Appl Phys Lett	HCAPLUS
Tans, S	1998	393	49	Nature	HCAPLUS
Treachy, M	1996	381	678	Nature	
Zhu, W	1999	75	873	Appl Phys Lett	HCAPLUS

L99 ANSWER 26 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2002:114014 HCAPLUS Full-text
DN 136:159188
TI Process for synthesizing one-dimensional nanosubstances by electron cyclotron resonance chemical vapor deposition
IN Shih, Han-Chang; Sung, Shing-Li; Tsai, Shang-Hua
PA Taiwan
SO U.S., 12 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6346303	B1	20020212	US 1999-311598	19990514 <--
	TW 452604	B	20010901	TW 1999-88100434	19990111 <--
PRAI	TW 1999-88100434	A	19990111 <--		

AB The present invention provides a process for synthesizing 1-dimensional nanosubstances. A membrane having channels serves as the host material for the synthesis. The anodic membrane is brought into contact with a microwave excited plasma of a precursor gas using an electron cyclotron resonance CVD (ECR-CVD) system. Parallel aligned nanosubstances can be synthesized in the channels of the membrane over a large area. C nitride nanosubstances are synthesized successfully for the 1st time in the present invention.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	1999			JP 411139821 A	
Borghs	1998			US 5779802 A	HCAPLUS
Miyamoto	2000			US 6157043 A	
Zettl	2000			US 6063243 A	HCAPLUS

L99 ANSWER 27 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:935221 HCAPLUS Full-text
DN 136:265246
TI Large scale synthesis of carbon nanotubes and their composite materials
AU Nagy, J. B.; Fonseca, A.; Pierard, N.; Willems, I.; Bister, G.; Pirlot, C.; Demortier, A.; Delhalle, J.; Mekhalif, Z.; Niesz, K.; Bossuot, Ch.; Pirard, J.-P.; Biro, L. P.; Konya, Z.; Colomer, J.-F.; Van Tendeloo, G.; Kiricsi, I.
CS Facultes Universitaires Notre-Dame de la Paix, Namur, B-5000, Belg.
SO AIP Conference Proceedings (2001), 591(Electronic Properties of Molecular Nanostructures), 483-488
CODEN: APCPCS; ISSN: 0094-243X
PB American Institute of Physics
DT Journal
LA English
AB MgO supported transition metal catalysts are systems for possible large-scale synthesis of carbon nanotubes. Indeed, the catalytic decomposition of acetylene at high temps. leads to the formation of thin multi-wall carbon

nanotubes with inner and outer diams. in the range of 2-4 and 5-9 nm, resp. The decomposition of methane, on the other hand, produces bundles and isolated single-wall nanotubes of high purity. Typically, the diams. of these isolated nanotubes are 1-5 nm. For the single-wall nanotubes aligned in the bundles, the diams. vary between 0.8 and 2 nm. The specimens were characterized by TEM, and high-resolution electron microscopy. The purity of the nanotubes was evaluated by proton induced x-ray emission and by thermal anal. The nanotubes were cut mech. in a ball mill, and the introduction of various functional groups was determined by XPS. Finally, a homogeneous mixture of carbon nanotubes and polyacrylonitrile was prepared as a composite.

IT 74-82-8, Methane, reactions 74-86-2, Acetylene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(large-scale synthesis of carbon nanotubes by using catalytic decomposition of)

RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

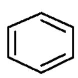
HC≡CH

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Bacsa, R	2000	323	566	Chem Phys Lett	HCAPLUS
Biro, L	2001			Electronic Propertie	
Bister, G	2001			Electronic Propertie	
Bossuot, C	2001			Electronic Propertie	
Colomer, J	2000	317	83	Chem Phys Lett	HCAPLUS
Dettlaf, U	2001			Electronic Propertie	
Ebbesen, T	1992	358	220	Nature	HCAPLUS
Ivanov, V	1994	223	329	Chem Phys Lett	HCAPLUS
Mukhopadhyay, K	1999	303	117	Chem Phys Lett	HCAPLUS
Pierard, N	2001	335	1	Chem Phys Lett	HCAPLUS
Siska, A	2001			Electronic Propertie	
Thess, A	1996	273	483	Science	HCAPLUS
Willems, I	2000	317	71	Chem Phys Lett	HCAPLUS
Zhang, A	1999	29	383	Microporous and Meso	HCAPLUS

L99 ANSWER 28 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:935150 HCAPLUS Full-text
DN 136:394767
TI Synthesis and characterization of carbon nanotubes
AU Ritschel, Manfred; Bartsch, Karl; Leonhardt, Albrecht; Graff, Andreas; Taschner, Christine; Fink, Jorg
CS IFW Dresden, Institute for Solid State Research, Dresden, D-01069, Germany
SO AIP Conference Proceedings (2001), 591(Electronic Properties of Molecular Nanostructures), 163-166
CODEN: APCPCS; ISSN: 0094-243X

PB American Institute of Physics
DT Journal
LA English
OS CASREACT 136:394767
AB The catalytic CVD (CCVD) is a very promising process with respect to large scale production of different kinds of carbon nanostructures. By modifying the deposition temperature, the catalyst material and the hydrocarbon nanofibers with herringbone structure, multi-walled nanotubes with tubular structure and single-walled nanotubes were deposited. Also, layers of aligned multi-walled nanotubes could be obtained on oxidized silicon substrates coated with thin sputtered metal layers (Co, permalloy) as well as onto WC-Co hardmetals by using the microwave assisted plasma CVD process (MWCVD). The obtained carbon modifications were characterized by scanning (SEM) and transmission (TEM) electron microscopy. The hydrogen storage capability of the nanofibers and nanotubes and the electron field emission of the nanotube layers was investigated.
IT 71-43-2, Benzene, reactions 74-85-1, Ethylene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reactant for preparation of carbon nanotubes by catalytic CVD)
RN 71-43-2 HCAPLUS
CN Benzene (CA INDEX NAME)



RN 74-85-1 HCAPLUS
CN Ethene (CA INDEX NAME)

$H_2C{=}CH_2$

IT 74-82-8, Methane, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reactant for preparation of carbon nanotubes by catalytic CVD or microwave assisted plasma CVD)
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Bonard, J				Solid State Electron	
Chambers, A	1998	102	4253	J Phys Chem B	HCAPLUS
Choi, W	1999	75	3129	Appl Phys Letters	HCAPLUS
Dillon, A	1997	386	377	Nature	HCAPLUS
Rodriguez, N	1993	8	3233	J Mater Res	HCAPLUS

Saito, Y	1998	73	1	Ultramicroscopy	HCAPLUS

L99 ANSWER 29 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:929160 HCAPLUS Full-text
DN 136:394762
TI Synthesis of aligned carbon nanotubes by C2H2 decomposition on Fe(CO)5 as a catalyst precursor
AU Han, J. H.; Yoo, J. E.; Yoo, S. C.; Lee, C. J.; Lee, K-H.
CS Nanotechnology Center, Iljin Nanotech Co., Ltd., Seoul, 157-810, S. Korea
SO AIP Conference Proceedings (2001), 590(Nanonetwork Materials), 59-62
CODEN: APCPCS; ISSN: 0094-243X
PB American Institute of Physics
DT Journal
LA English
AB Aligned carbon nanotubes are simply synthesized in a single step by the thermal decomposition of gaseous mixture of C2H2 and Fe(CO)5 as a catalyst precursor. Multi-walled carbon nanotubes were produced on the most of the heated zone of the furnace with high packing d. The diameter and length is 20-50nm and .apprx.55 μm, resp. The flow rate and temperature plays critical role in the synthesis of carbon nanotubes.
IT 74-86-2, Acetylene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of aligned carbon nanotubes by acetylene decomposition on Fe(CO)5 as a catalyst precursor)
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

HC≡CH

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Cheng, H	1998	72	3282	Appl Phys Letters	HCAPLUS
Nikolaev, P	1999	313	91	Chem Phys Letters	HCAPLUS
Satishkumar, B	1999	307	158	Chem Phys Letters	HCAPLUS

L99 ANSWER 30 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:876585 HCAPLUS Full-text
DN 135:379820
TI Method of growth of branched carbon nanotubes and devices produced from the branched nanotubes
IN Li, Jing; Papadopoulos, Christo; Xu, Jingming
PA The Governing Council of the University of Toronto, Can.
SO U.S., 15 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6325909	B1	20011204	US 1999-453810	19991203 <--
PRAI	US 1999-155636P	P	19990924 <--		

AB A method of producing Y-junction carbon nanotubes. An alumina template with branched growth channels is produced after which individual Y-junction carbon nanotubes are grown directly by pyrolysis of acetylene using cobalt catalysis.

The use of a branched growth channel allows the natural simultaneous formation of a very large number of individual but well-aligned three-port Y-junction carbon nanotubes with excellent uniformity and control over the length (up to several tens μm) and diameter (15-100 nm) of the "stem" and "branches" sep. These Y-junctions offer the nanoelectronics community a new base material for mol. scale electronic devices including for example transistors and rectifiers.

IT 74-86-2, Acetylene, processes
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(growth of branched carbon nanotubes by pyrolysis of)

RN 74-86-2 HCAPLUS

CN Ethyne (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Ajayan	1995			US 5457343	HCAPLUS
Anon	1998	9	153	Nano-technology	
Anon	1996	53	11108	Physical Review B	
Anon	1996	53	2044	Physical Review B	
Anon	1996	76	971	Physical Review Lett	
Anon	1997	79	4453	Physical Review Lett	
Anon	1997	278	100	www-.sciencemag.org,	
Baker	1995			US 5413866	HCAPLUS
Furneaux	1987			US 4687551	HCAPLUS
Iijima	1998			US 5747161	HCAPLUS
Iijima	1998			US 5830326	HCAPLUS
Ohta	1996			US 5489477	HCAPLUS
Olk	1998			US 5753088	HCAPLUS

L99 ANSWER 31 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2001:853926 HCAPLUS Full-text

DN 136:176362

TI Well-ordered Co nanowire arrays for aligned carbon nanotube arrays

AU Lee, Jin Seung; Gu, Geun Hoi; Kim, Hoseong; Suh, Jung Sang; Han, Intaek; Lee, Nae Sung; Kim, Jong Min; Park, Gyeong-Su

CS School of Chemistry and Molecular Engineering, Seoul National University, Seoul, 151-747, S. Korea

SO Synthetic Metals (2001), 124(2-3), 307-310
CODEN: SYMEDZ; ISSN: 0379-6779

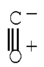
PB Elsevier Science S.A.

DT Journal

LA English

AB Well-ordered Co nanowire arrays formed on the porous anodic aluminum oxide (AAO) templates prepared by a two-step anodization technique were used in the fabrication of well-aligned carbon nanotubes. Designed Co nanowire arrays can be made by controlling the pore arrays on AAO templates. By using them as a catalyst it is possible to fabricate the designed carbon nanotube arrays. Carbon nanotubes fabricated by disproportionation of CO were well graphitized, uniform in diameter and aligned vertically with respect to the plane of the template. Probably CO is an ideal precursor in fabrication of carbon nanotubes.

IT 630-08-0, Carbon monoxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(well-ordered cobalt nanowire arrays for aligned carbon nanotube arrays formed on porous anodic alumina templates)
RN 630-08-0 HCAPLUS
CN Carbon monoxide (CA INDEX NAME)



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Ago, H	2000	77	79	Appl Phys Lett	HCAPLUS
Almawlawi, D	1991	70	4421	J Appl Phys	HCAPLUS
Chen, P	1997	35	1495	Carbon	HCAPLUS
Chen, P	2000	38	139	Carbon	HCAPLUS
de Heer, W	1995	270	1179	Science	HCAPLUS
Diggle, J	1969	69	365	Chem Rev	HCAPLUS
Fan, S	1999	283	512	Science	HCAPLUS
Iijma, S	1991	354	56	Nature	
Kitiyanan, B	2000	317	497	Chem Phys Lett	HCAPLUS
Kong, J	1998	395	878	Nature	HCAPLUS
Marta, G	1994	1	63	Topics Catal	
Masuda, H	1996	35	L126	Jpn J Appl Phys	HCAPLUS
Pingheng, T	1997	28	369	J Raman Spectr	
Ren, Z	1998	282	1105	Science	HCAPLUS
Suh, J	1999	75	2047	Appl Phys Lett	HCAPLUS
Sung, S	1999	74	197	Appl Phys Lett	HCAPLUS
Tan, P	1999	74	1818	Appl Phys Lett	HCAPLUS
Terrones, M	1997	388	52	Nature	HCAPLUS
Treacy, M	1996	381	678	Nature	HCAPLUS
Tuinstra, F	1970	53	1126	J Chem Phys	HCAPLUS
Walters, D	1999	74	3803	Appl Phys Lett	HCAPLUS
Zhu, W	1999	75	873	Appl Phys Lett	HCAPLUS

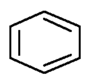
L99 ANSWER 32 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:826223 HCAPLUS Full-text
DN 136:154955
TI Growing pillars of densely packed carbon nanotubes on Ni-coated silica
AU Wei, B. Q.; Zhang, Z. J.; Ajayan, P. M.; Ramanath, G.
CS Department of Materials Science and Engineering, Rensselaer Polytechnic Institute, Troy, NY, 12180, USA
SO Carbon (2002), 40(1), 47-51
CODEN: CRBNAH; ISSN: 0008-6223
PB Elsevier Science Ltd.
DT Journal
LA English
AB We report the growth of pillar-like cylindrical structures consisting of densely packed and vertically aligned multi-walled carbon nanotubes by exposing Ni-coated oxidized-Si (001) substrates to a xylene-ferrocene mixture The nanotube pillars have a diameter between 10 and 100 μm, and lengths of several tens of micrometers. Formation of circular microcracks in the film allows ferrocene and xylene mols. to reach the underlying SiO2 layer where

pillars nucleate and grow out of the plane of the film surface. The nanotube pillars are attractive for applications such as energy storage, electrodes, and composite reinforcements.

IT 1330-20-7, Xylene, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(xylene-ferrocene mixture; growing pillars of densely packed carbon nanotubes on nickel-coated silica)

RN 1330-20-7 HCAPLUS

CN Benzene, dimethyl- (CA INDEX NAME)



2 (D1— Me)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Chou, S	1999	B17	3197	J Vac Sci Technol	
Dai, H	1996	272	523	Science	HCAPLUS
Ebbesen, T	1996	382	54	Nature	HCAPLUS
Fan, S	1999	283	512	Science	HCAPLUS
Fruchart, O	1999	83	2769	Phys Rev Lett	HCAPLUS
Hamada, N	1992	68	1579	Phys Rev Lett	HCAPLUS
Kong, J	1998	395	878	Nature	HCAPLUS
Mintmire, J	1992	68	631	Phys Rev Lett	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Saito, R	1992	B46	1804	Phys Rev	
Tans, S	1997	386	474	Nature	HCAPLUS
Tans, S	1998	393	49	Nature	HCAPLUS
Terrones, M	1997	388	52	Nature	HCAPLUS
Thess, A	1996	273	483	Science	HCAPLUS
Wei, B	2000	77	2985	Appl Phys Lett	HCAPLUS
Zhang, Z	2000	77	3764	Appl Phys Lett	HCAPLUS

L99 ANSWER 33 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2001:691827 HCAPLUS Full-text

DN 135:249736

TI Method of vertically aligning carbon nanotubes on substrates using thermal chemical vapor deposition with dc bias

IN Lee, Young-hee; Lee, Nae-sung; Kim, Jong-min

PA Samsung SDI Co. Ltd., S. Korea

SO Eur. Pat. Appl., 9 pp.
CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1134304	A2	20010919	EP 2001-302389	20010315 <--
	EP 1134304	A3	20030402		

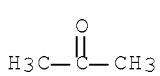
EP 1134304 B1 20060823
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO

	KR 2001091389	A	20011023	KR 2000-13039	20000315 <--
	US 2001024633	A1	20010927	US 2001-808011	20010315 <--
	US 6673392	B2	20040106		
	JP 2001303250	A	20011031	JP 2001-73546	20010315 <--
PRAI	KR 2000-13039	A	20000315 <--		

AB A method of vertically aligning pure C nanotubes on a large glass or Si substrate at a low temperature using a low pressure d.c. thermal chemical vapor deposition method is provided. In this method, catalytic decomposition with respect to hydrocarbon gases is performed in 2 steps. Basically, an existing thermal chemical vapor deposition method using hydrocarbon gases such as acetylene, ethylene, methane or propane is used. To be more specific, the hydrocarbon gases are primarily decomposed at a low temperature of 400-500° by passing the hydrocarbon gases through a mesh-structure catalyst which is made of Ni, Fe, Co, Y, Pd, Pt, Au or an alloy of ≥2 of these materials. Secondly, the catalytically- and thermally-decomposed hydrocarbon gases pass through the space between a C nanotube growing substrate and an electrode substrate made of Ni, Fe, Co, Y, Pd, Pt, Au or an alloy of ≥2 of these materials or an electrode substrate on which Ni, Fe, Co, Y, Pd, Pt, Au or an alloy of ≥2 of these materials is thinly deposited by sputtering or electron-beam evaporation, the space to which d.c. voltage was applied. Thus, C nanotubes are vertically aligned at a temperature no grater than the glass m.p. The thus grown large C nanotube substrate can be applied directly to FEDs, lower the turn-on voltage for electron emission, simplify the process of manufacturing an FED, and significantly reduce the manufacturing costs of FEDs. Also, an electrode substrate holder and a C nanotube growing substrate holder are designed to mount several electrode substrates and several C nanotube growing substrates simultaneously, whereby the productivity is increased.

IT 67-64-1, Acetone, processes 74-82-8, Methane, processes
74-85-1, Ethylene, processes 74-98-6, Propane, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(thermal CVD to vertically aligning carbon nanotubes on substrates using)

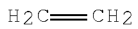
RN 67-64-1 HCAPLUS
CN 2-Propanone (CA INDEX NAME)



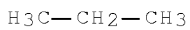
RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

RN 74-85-1 HCAPLUS
CN Ethene (CA INDEX NAME)



RN 74-98-6 HCAPLUS
CN Propane (CA INDEX NAME)



L99 ANSWER 34 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:654684 HCAPLUS Full-text
DN 135:214880
TI PECVD process for controlled growth of carbon nanotubes with small size deviations
IN Bower, Christopher Andrew; Jin, Sungho; Zhu, Wei
PA Lucent Technologies Inc., USA
SO Eur. Pat. Appl., 18 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1129990	A1	20010905	EP 2000-307617	20000904 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	CA 2331278	A1	20010825	CA 2001-2331278	20010117 <--
	JP 2001262343	A	20010926	JP 2001-45300	20010221 <--
PRAI	US 2000-512873	A	20000225 <--		

AB The process provides conformably-aligned nanotubes perpendicular to the local surface of a flat or non-flat substrate , with an average deviation <15°, while also allows control over the nanotube diameter of 10-300 nm, length of 0.5-30 µm, and location. The process uses a high frequency plasma enhanced chemical vapor deposition (PECVD) advantageously with an acetylene-ammonia flow to provide such results, typically with Co, Ni, and/or Fe as a catalyst metal film 0.5-200 nm thick. The substrate material is selected from Si, Hf, SiO_2, AlN, Al_2O_3, Si_3N_4, and diamond.
IT 74-86-2, Acetylene, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(PECVD gas mixture component; PECVD process for controlled growth of carbon nanotubes with small size deviations)
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Badzian, A	2000	38	1507	CARBON; CARBON 2000	HCAPLUS

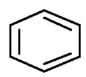
Bower, C	2000	77	830	APPLIED PHYSICS LETT	HCAPLUS
Cheol, J	1999	312	461	CHEMICAL PHYSICS LET	
Choi, Y	2000	18	1864	46TH NATIONAL SYMPOS	
Choi, Y	2000	108	159	SYNTHETIC METALS	HCAPLUS
Cui, H	2000	593	39	SYMPOSIUM-AMORPHOUS	HCAPLUS
Huang, Z	1998	73	3845	APPLIED PHYSICS LETT	HCAPLUS
Kuettel, O	1998	73	2113	APPLIED PHYSICS LETT	
Murakami, H	2000	76	1776	APPLIED PHYSICS LETT	HCAPLUS
Qin, L	1998	72	3437	APPLIED PHYSICS LETT	HCAPLUS
Qing, Z	2000	14	289	AMORPHOUS CARBON INT	
Ren, Z	1998	282	1105	SCIENCE	HCAPLUS
Terrones, M	1998	285	299	CHEMICAL PHYSICS LET	
The Research Foundation	1999			WO 9965821 A	HCAPLUS
Young, C	2000	76	2367	APPLIED PHYSICS LETT	

L99 ANSWER 35 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:249470 HCAPLUS Full-text
DN 135:54291
TI Fabrication of gated cathode structures using an in situ grown vertically aligned carbon nanofiber as a field emission element
AU Guillorn, M. A.; Simpson, M. L.; Bordonaro, G. J.; Merkulov, V. I.; Baylor, L. R.; Lowndes, D. H.
CS Department of Electrical and Computer Engineering, University of Tennessee, Knoxville, TN, 37996, USA
SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (2001), 19(2), 573-578
CODEN: JVTBD9; ISSN: 0734-211X
PB American Institute of Physics
DT Journal
LA English
AB Vertically aligned C nanofibers (VACNFs) are extremely promising cathode materials for microfabricated field emission devices, due to their low threshold field to initiate electron emission, inherent stability, and ruggedness, and relative ease of fabrication at moderate growth temps. The authors report on a process for fabricating gated cathode structures that uses a single in situ grown C nanofiber as a field emission element. The electrostatic gating structure was fabricated using a combination of traditional micro- and nanofabrication techniques. High-resolution electron beam lithog. was used to define the 1st layer of features consisting of catalyst sites for VACNF growth and alignment marks for subsequent photolithog. steps. Following metalization of these features, plasma enhanced CVD (PECVD) was used to deposit a 1-μm-thick interlayer dielec. Photolithog. was then used to expose the gate electrode pattern consisting of 1 μm apertures aligned to the buried catalyst sites. After metalizing the electrode pattern the structures were reactive ion etched until the buried catalyst sites were released. To complete the devices, a novel PECVD process using a d.c. acetylene/NH_3/He plasma was used to grow single VACNFs inside the electrostatic gating structures. The issues associated with the fabrication of these devices are discussed along with their potential applications.
IT 74-86-2, Acetylene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(fabrication of gated cathode structures using in situ grown vertically aligned carbon nanofiber as field emission element)
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Baptist, R	1996	14	2119	J Vac Sci Technol B	HCAPLUS
Baylor, L	2001			the 45th Internation	
Driskill-Smith, A	1999	75	2845	Appl Phys Lett	HCAPLUS
Felter, T	1999	17	1993	J Vac Sci Technol B	HCAPLUS
Merkulov, V	1998	73	2591	Appl Phys Lett	HCAPLUS
Merkulov, V	1999	75	1228	Appl Phys Lett	HCAPLUS
Merkulov, V	2000	76	3555	Appl Phys Lett	HCAPLUS
Merkulov, V	1998	11	178	International Vacuum	
Merkulov, V	2001	89	1933	J Appl Phys	HCAPLUS
Moritz, H	1985	ED-32	672	IEEE Trans Electron	HCAPLUS
Phillips, P	1995	42	1674	IEEE Trans Electron	
Ren, Z	1999	75	1086	Appl Phys Lett	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Temple, D	1999	24	185	Mater Sci Eng R	
Vaudaine, P	1991		197	International Electr	

L99 ANSWER 36 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2001:150001 HCAPLUS Full-text
DN 134:255697
TI Vertical aligned carbon nanotubes grown on Au film and reduction of threshold field in field emission
AU Cao, A.; Ci, L.; Li, D.; Wei, B.; Xu, C.; Liang, J.; Wu, D.
CS Department of Mechanical Engineering, State Key Laboratory of Automotive Safety and Energy, Tsinghua University, Beijing, 100084, Peop. Rep. China
SO Chemical Physics Letters (2001), 335(3,4), 150-154
CODEN: CHPLBC; ISSN: 0009-2614
PB Elsevier Science B.V.
DT Journal
LA English
AB Vertical aligned carbon nanotubes were synthesized on quartz glass and Au film by catalytic decomposition of ferrocene and xylene. Morphol. differences between aligned nanotubes grown on the two substrates are studied and discussed through SEM images. Field emission testing shows that aligned nanotubes grown on Au have a lower threshold field than those grown on quartz glass. This reduction of threshold field indicates a new way to improve field emission properties through the selection of a highly conductive growth substrate for carbon nanotubes.
IT 1330-20-7, Xylene, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(carbon source; growth of vertical-aligned carbon nanotubes on Au film and vitreous silica by catalytic decomposition of ferrocene and xylene and reduction of threshold field in field emission)
RN 1330-20-7 HCAPLUS
CN Benzene, dimethyl- (CA INDEX NAME)



2 (D1— Me)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Andrews, R	1999	303	467	Chem Phys Lett	HCAPLUS
Bai, X	2000	76	2624	Appl Phys Lett	HCAPLUS
Che, G	1998	10	260	Chem Mater	HCAPLUS
Chen, Y	2000	76	2469	Appl Phys Lett	HCAPLUS
Choi, Y	2000	76	2367	Appl Phys Lett	HCAPLUS
Ebbesen, T	1996	382	54	Nature	HCAPLUS
Fan, S	1999	283	512	Science	HCAPLUS
Iijima, S	1991	354	56	Nature	HCAPLUS
Iijima, S	1993	363	603	Nature	HCAPLUS
Kyotani, T	1996	8	2109	Chem Mater	HCAPLUS
Li, W	1997	70	2684	Appl Phys Lett	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Merkulov, V	2000	76	3555	Appl Phys Lett	HCAPLUS
Murakami, H	2000	76	1776	Appl Phys Lett	HCAPLUS
Nath, M	2000	322	333	Chem Phys Lett	HCAPLUS
Rao, C	1998		1525	Chem Commun	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Rinzler, A	1995	269	150	Science	

L99 ANSWER 37 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2000:861598 HCAPLUS Full-text
DN 134:30909
TI Substrate-supported aligned carbon nanotube films
IN Mau, Albert; Dai, Li-Ming; Shaoming, Huang
PA Commonwealth Scientific and Industrial Research Organisation, Australia
SO PCT Int. Appl., 19 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

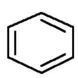
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000073204	A1	20001207	WO 2000-AU550	20000525 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	EP 1198414	A2	20020424	EP 2000-926581	20000525 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL				
	JP 2003500325	T	20030107	JP 2000-621280	20000525 <--

AU 759314 B2 20030410 AU 2000-45284 20000525 <--
TW 499395 B 20020821 TW 2000-89110217 20000526 <--
PRAI AU 1999-650 A 19990528 <--
WO 2000-AU550 W 20000525 <--

AB Substrate-supported aligned carbon nanotube films are prepared by synthesizing a layer of aligned carbon nanotubes on a substrate capable of supporting nanotube growth, applying a layer of a second substrate to a top surface of the aligned carbon nanotube layer, and peeling off the substrate capable of supporting nanotube growth, to provide an aligned carbon nanotube film supported on the second substrate.

IT 71-43-2, Benzene, reactions 74-82-8, Methane, reactions
74-86-2, Acetylene, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(substrate-supported aligned carbon nanotube films)

RN 71-43-2 HCAPLUS
CN Benzene (CA INDEX NAME)



RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

$HC\equiv CH$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Japan Fine Ceramics Cen	1999			EP 0947466 A	HCAPLUS
The Research Foundation	1999			WO 9965821 A	HCAPLUS

L99 ANSWER 38 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2000:861597 HCAPLUS Full-text
DN 134:30908
TI Preparation of patterned carbon nanotube films
IN Mau, Albert; Dai, Li-Ming; Huang, Shaoming; Yang, Yong Yuan; He, Hui Zhu
PA Commonwealth Scientific and Industrial Research Organisation, Australia
SO PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DT Patent
LA English

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FAN.CNT 1
     PATENT NO.          KIND   DATE       APPLICATION NO.        DATE
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PI   WO 2000073203        A1    20001207   WO 2000-AU549          20000525 <--
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR,
             CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU,
             ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU,
             LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD,
             SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU,
             ZA, ZW
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
             DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,
             CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
     EP 1200341           A1    20020502   EP 2000-926580         20000525 <--
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO, MK, CY, AL
     AU 753177            B2    20021010   AU 2000-45283          20000525 <--
     JP 2003500324        T     20030107   JP 2000-621279         20000525 <--
     US 6811957           B1    20041102   US 2002-979793         20020315 <--
PRAI AU 1999-649          A     19990528  <--
     WO 2000-AU549        W     20000525  <--
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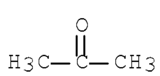
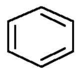
AB A patterned layer of aligned carbon nanotubes is prepared on a substrate by applying a photoresist layer to a portion of a substrate surface capable of supporting nanotube growth, masking a region of the photoresist layer to provide a masked portion and an unmasked portion, and subjecting the unmasked portion to electromagnetic radiation of a wavelength and intensity sufficient to transform the unmasked portion while leaving the masked portion substantially untransformed, where the transformed portion exhibits solubility characteristics different from the untransformed portion. The photoresist layer is developed by contacting with a solvent for a time and conditions sufficient to dissolve one of the transformed and untransformed portions of the photoresist, leaving the other portion attached to the substrate. A layer of aligned carbon nanotubes is synthesized on regions of the substrate to which the remaining photoresist portion is not attached, to provide a patterned layer of aligned carbon nanotubes on the substrate.

IT 67-64-1, Acetone, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(preparation of patterned carbon nanotube films)
RN 67-64-1 HCAPLUS
CN 2-Propanone (CA INDEX NAME)



IT 71-43-2, Benzene, reactions 74-82-8, Methane, reactions
74-86-2, Acetylene, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(preparation of patterned carbon nanotube films)
RN 71-43-2 HCAPLUS
CN Benzene (CA INDEX NAME)



RN 74-82-8 HCAPLUS
CN Methane (CA INDEX NAME)

CH_4

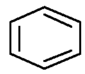
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

$HC \equiv CH$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Chuang	2000			US 6062931 A	HCAPLUS
Debe	1998			US 5726524 A	HCAPLUS
Japan Fine Ceramics Cen	1998			WO 9842620 A	HCAPLUS
Xu	1999			US 5872422 A	HCAPLUS
Xu	1999			US 5973444 A	HCAPLUS

L99 ANSWER 39 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2000:847363 HCAPLUS Full-text
DN 134:89909
TI Substrate-site selective growth of aligned carbon nanotubes
AU Zhang, Z. J.; Wei, B. Q.; Ramanath, G.; Ajayan, P. M.
CS Department of Materials Science and Engineering, Rensselaer Polytechnic Institute, Troy, NY, 12180, USA
SO Applied Physics Letters (2000), 77(23), 3764-3766
CODEN: APPLAB; ISSN: 0003-6951
PB American Institute of Physics
DT Journal
LA English
AB The authors report highly substrate-site selective growth of carbon nanotubes by chemical vapor deposition from precursors of ferrocene and xylene mixts. The technique allows us to grow well- aligned multiwalled carbon nanotubes preferentially on the SiO2 regions of patterned SiO2/Si substrates prepared by conventional lithog. This eliminates the catalyst predeposition step in the fabrication process. This simple approach may also be applied to build large-scale networks of organized nanotubes on planar substrates.
IT 1330-20-7, Xylene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(Substrate-site selective growth of aligned carbon nanotubes by CVD using ferrocene and xylene mixts.)
RN 1330-20-7 HCAPLUS
CN Benzene, dimethyl- (CA INDEX NAME)



2 (D1— Me)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Andrews, R	1999	303	467	Chem Phys Lett	HCAPLUS
Batchtold, A	1999	397	673	Nature	
Cheng, H	1998	72	3282	Appl Phys Lett	HCAPLUS
Falvo, M	1997	389	582	Nature	MEDLINE
Fan, S	1999	283	512	Science	HCAPLUS
Frank, S	1998	280	1744	Science	HCAPLUS
Iijima, S	1991	354	56	Nature	HCAPLUS
Iwasaki, T	1999	75	2044	Appl Phys Lett	HCAPLUS
Li, J	1999	75	367	Appl Phys Lett	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Ren, Z	1999	75	1086	Appl Phys Lett	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Sen, R	1997	267	276	Chem Phys Lett	HCAPLUS
Suh, J	1999	75	2047	Appl Phys Lett	HCAPLUS
Terrones, M	1997	388	52	Nature	HCAPLUS
Wong, E	1997	277	1971	Science	HCAPLUS

L99 ANSWER 40 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2000:846908 HCAPLUS Full-text
DN 134:19015
TI Aligned conical carbon nanotubes
AU Chen, Yan; Guo, Liping; Patel, S.; Shaw, D. T.
CS Department of Electrical Engineering, State University of New York at Buffalo, Buffalo, NY, 14260, USA
SO Journal of Materials Science (2000), 35(21), 5517-5521
CODEN: JMTSAS; ISSN: 0022-2461
PB Kluwer Academic Publishers
DT Journal
LA English
AB Aligned conical carbon nanotubes (CCNTs) have been synthesized on catalyst-coated Si (100) substrates by a D.C. plasma-assisted hot filament chemical vapor deposition process. The same technique under slightly different deposition conditions has been used to grow aligned conventional carbon nanotubes. The conical shape is due to secondary graphitic growth on the main nanotube. This growth results in the formation of a series of inverted lamp shade-type structures stacked over each other, which gives the CNT the appearance of a cone. The CCNT structures are typically 2 μm at the base with an inner diameter of 100 nm and 2000 nm long. Patterned growth, e.g., arrays of 6 μm + 6 μm square, has been achieved. Field emission from CCNTs for use in flat panel displays is also reported.
IT 74-86-2, Acetylene, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(aligned conical carbon nanotubes from plasma-assisted hot-filament CVD)

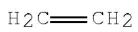
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Augus, J	1988	241	887	Science	
Baker, R	1989	27	315	Carbon	HCAPLUS
Chen, Y	1998	73	2119	Appl Phys Lett	HCAPLUS
Chen, Y	1997	278	178	Chem Phys Lett	
Chen, Y	1998	193	342	J Crystal Growth	HCAPLUS
Chen, Y	1996	8	L685	J Phys Condens Matt	HCAPLUS
Chen, Y	1997	75	155	Philo Mag Lett	HCAPLUS
Chen, Y				unpublished	
Collins, P	1996	69	1069	Appl Phys Lett	
De Heer, W	1995	270	179	Science	
Endo, M	1993	33	873	Carbon	
Li, W	1996	274	1701	Science	HCAPLUS
Matasumoto, S	1982	17	3106	J Mater Sci	
Tibbetts, G	1985	73	431	J Crystal Growth	HCAPLUS
Wang, Q	1997	70	3308	Appl Phys Lett	HCAPLUS

L99 ANSWER 41 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2000:657584 HCAPLUS Full-text
DN 133:357173
TI Fabrication of electron field emitters using carbon nanotubes
AU Choi, Young Chul; Park, Young Soo; Lee, Young Hee; Choi, Won Bong; Lee, Nae Sung; Kim, Jong Min; Lee, Cheol Jin; Kim, Dae Woon; Lee, Tae Jae
CS Department of Semiconductor Science and Technology, Jeonbuk National University, Jeonju, 561-756, S. Korea
SO International Journal of High Speed Electronics and Systems (2000), 10(1), 5-11
CODEN: IHSSEF; ISSN: 0129-1564
PB World Scientific Publishing Co. Pte. Ltd.
DT Journal
LA English
AB Carbon nanotube (CNT)-based field-emission displays (FEDs) have been fabricated using well-aligned nanotubes on substrates in situ grown by thermal chemical vapor deposition (CVD), and paste squeeze and surface rubbing techniques. Although the former seems to be an ultimate approach for CNT-based FED, a large area synthesis and uniform field emission over the entire area is not yet easily accessible. On the other hand, the latter is fully scalable on glass substrates and shows very high luminance of 1800 cd/m2 at 4 V/µm. The degradation of emission currents for single-wall carbon nanotubes was less than 10% in elec. aging tests. Large field-enhancement factors (23,000-46,000) and low turn-on voltages (1.5-3 V/µm) were attributed to well-aligned carbon nanotubes on substrates and a large number d. of carbon nanotubes of 5-10 µm-2, which was confirmed by high-resolution SEM.
IT 74-85-1, Ethylene, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(carbon nanotube-based field-emission displays fabricated using well-aligned nanotubes on substrates

)
RN 74-85-1 HCAPLUS
CN Ethene (CA INDEX NAME)



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Bethune, D	1993	363	605	Nature	HCAPLUS
Brodie, I	1992	83	91	Advances in Electron	
Chalamala, B	1998		42	IEEE Spectrum	
Collins, P	1996	69	1969	Appl Phys Lett	
Collins, P	1997	55	9391	Phys Rev B	HCAPLUS
de Heer, W	1995	270	1179	Science	HCAPLUS
Ebbesen, T	1997			Carbon Nanotubes	
Fan, S	1999	283	512	Science	HCAPLUS
Gadzuk, B	1974	278	659	Acad Sci B	
Iijima, S	1991	354	56	Nature	HCAPLUS
Kong, J	1998	395	878	Nature	HCAPLUS
Lee, C	1999			Chem Phys Lett (in s	
Li, W	1998	274	1701	Science	
Liu, J	1998	280	1253	Science	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Saito, Y	1997	36	L1340	Jpn J Appl Phys	
Tans, S	1998	393	49	Nature	HCAPLUS
van Veen, G	1994	12	655	J Vac Sci Technol B	HCAPLUS
Wang, Q	1998	72	2912	Appl Phys Lett	HCAPLUS

L99 ANSWER 42 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2000:537230 HCAPLUS Full-text
DN 133:245518
TI An enhanced CVD approach to extensive nanotube networks with directionality
AU Franklin, Nathan R.; Dai, Hongjie
CS Department of Chemistry, Stanford University, Stanford, CA, 94305, USA
SO Advanced Materials (Weinheim, Germany) (2000), 12(12), 890-894
CODEN: ADVMEW; ISSN: 0935-9648
PB Wiley-VCH Verlag GmbH
DT Journal
LA English
AB Single-walled carbon nanotube (SWNT) networks have been prepared by CVD on a special silicon substrate having multiple tower-like protuberances. Flowing precursor gases are first passed through a special conditioning catalyst and activated. The SWNTs grow attached to the silicon towers, held by van der Waals interactions, to form a highly directional suspended matrix. Longer SWNTs .apprx. 30 μm sometimes stretch from a tower directly to the substrate, but only those with length .apprx. 100 μm exhibit alignment with the gas flow direction. Nanotube yield can be affected by altering the catalyst composition Mass spectral anal. of the effluent gas indicates the presence of benzene, which is formed in the conditioning catalyst from the hydrogen and methane precursors. Possibly, the presence of benzene enhances nanotube growth activation.
IT 74-82-8, Methane, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)

(CVD nanotube precursor; enhanced CVD approach to extensive
nanotube networks with directionality)

RN 74-82-8 HCAPLUS

CN Methane (CA INDEX NAME)

CH_4

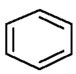
IT 71-43-2, Benzene, processes

RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process)

(byproduct of CVD nanotube growth; enhanced CVD approach to extensive nanotube networks with directionality)

RN 71-43-2 HCAPLUS

CN Benzene (CA INDEX NAME)



IT 64-17-5, Ethanol, processes

RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(catalyst component; enhanced CVD approach to extensive nanotube networks with directionality)

RN 64-17-5 HCAPLUS

CN Ethanol (CA INDEX NAME)

$H_3C—CH_2—OH$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Cassell, A	1999	121	7975	J Am Chem Soc	HCAPLUS
Cassell, A	1999	103	6484	J Phys Chem	HCAPLUS
Dai, H	1999	103	11246	J Phys Chem	HCAPLUS
Dresselhaus, M	1996			Science of Fullerene	
Fan, S	1999	283	512	Science	HCAPLUS
Kind, H	1999	11	1285	Adv Mater	HCAPLUS
Kong, J	1998	292	567	Chem Phys Lett	HCAPLUS
Kong, J	1998	395	878	Nature	HCAPLUS
Liu, S	1999	181	175	J Catal	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Wang, L	1993	21	35	Catal Lett	HCAPLUS
Yang, P	1998	282	2244	Science	HCAPLUS

L99 ANSWER 43 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2000:533659 HCAPLUS Full-text

DN 133:304291

TI Carbon nanotube synthesized on metallic substrates

AU Emmenegger, C.; Mauron, P.; Zuttel, A.; Nutzenadel, C.; Schneuwly, A.; Gallay, R.; Schlapbach, L.
CS Institut de Physique, Universite de Fribourg, Perolles, Fribourg, CH-1700, Switz.
SO Applied Surface Science (2000), 162-163, 452-456
CODEN: ASUSEE; ISSN: 0169-4332
PB Elsevier Science B.V.
DT Journal
LA English
AB Well-aligned C nanotubes films were synthesized by a pyrolytic method with Al and Si as substrates. The substrate was coated with a thin film of Fe(NO3)3. This film was transformed by subsequent heating into Fe2O clusters with a diameter of a few nm. Nanotubes were synthesized from acetylene at a temperature at 630-750°. The nanotubes observed are multi-wall type with a length of 1-10 μm and a diameter of 5-100 nm. The growth of the nanotubes is a function of the film thickness of deposited Fe(NO3)3 film as well as the temperature The nanotubes deposited on Al exhibit excellent properties as electrode material in electrochem. double layer capacitors (ECDLs).
IT 74-86-2, Acetylene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(vapor deposition precursor; carbon nanotube synthesized on metallic substrates)
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	1997			Carbon Nanotubes	
Bachtold, A	1999	397	673	Nature	HCAPLUS
Dai, H	1996	384	147	Nature	HCAPLUS
Dai, H	1996	384	147	Nature	HCAPLUS
Ebbesen, T	1992	358	220	Nature	HCAPLUS
Endo, M	1993	54	1841	J Phys Chem Solids	HCAPLUS
Fan, S	1999	283	512	Science	HCAPLUS
Hafner, J	1999	398	761	Nature	HCAPLUS
Hamada, N	1992	68	1579	Phys Rev Lett	HCAPLUS
Iijima, S	1991	354	56	Nature	HCAPLUS
Kibi, Y	1996	60	219	J Power Source	HCAPLUS
Kuttel, O	1998	73	15	Appl Phys Lett	
McEuen, P	1998	393	16	Nature	
Morito, T	1996	60	239	J Power Source	
Niu, C	1997	70	11	Appl Phys Lett	
Ren, Z	1998	282	1105	Science	HCAPLUS
Saito, R	1992	60	2204	Appl Phys Lett	HCAPLUS
Tans, S	1997	386	474	Nature	HCAPLUS
Tans, S	1998	393	49	Nature	HCAPLUS

L99 ANSWER 44 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2000:145710 HCAPLUS Full-text
DN 132:258623
TI A novel form of carbon nitrides: well-aligned carbon nitride nanotubes and their characterization
AU Sung, S. L.; Tsai, S. H.; Liu, X. W.; Shih, H. C.

CS Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, 300, Taiwan
SO Journal of Materials Research (2000), 15(2), 502-510
CODEN: JMREEE; ISSN: 0884-2914
PB Materials Research Society
DT Journal
LA English
AB Well-aligned C nitride nanotubes were prepared with a porous Al2O3 membrane as a template when using electron cyclotron resonance (ECR) plasma in a mixture of C2H2 and N2 as the precursor with an applied neg. bias to the graphite sample holder. The hollow structure and good aligoment of the nanotubes were verified by field-emission SEM. C nitride nanotubes were transparent when viewed by TEM, which showed that the nanotubes were hollow with a diameter of .apprx.250 nm and a length of .apprx.50-80 μm. The amorphous nature of the nanotubes was confirmed by the absence of crystalline phases arising from selected-area diffraction patterns. Both Auger electron microscopy and XPS spectra indicated that these nanotubes are composed of N and C. The total N/C ratio is 0.72, which is considerably higher than other forms of C nitrides. No free-C phase was observed in the amorphous C nitride nanotubes. The absorption bands at 1250-1750 cm-1 in FTIR spectroscopy provided direct evidence for N atoms, effectively incorporated within the amorphous C network. Such growth of well-aligned C nitride nanotubes can be controlled by tuning the ECR plasma conditions and the applied neg. voltage to the Al2O3 template.
IT 74-86-2, Acetylene, processes
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(preparation and characterization of well-aligned carbon nitride nanotubes)
RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Amaratunga, G	1996	68	2529	Appl Phys Lett	HCAPLUS
Amaratunga, G	1996	198-2	611	J Non-Cryst Solids	HCAPLUS
Barber, M	1973	69	551	J Chem Soc Faraday T	HCAPLUS
Brodie, I	1992	83	1	Adv Electron Electro	HCAPLUS
Brodies, I	1994	82	1006	Proc IEEE	
Casanovas, J	1996	118	8071	J Am Chem Soc	HCAPLUS
de Heer, W	1997	9	87	Adv Mater	HCAPLUS
de Heer, W	1995	270	1179	Science	HCAPLUS
de Heer, W	1995	268	845	Science	HCAPLUS
Ebbesen, T	1992	358	220	Nature	HCAPLUS
Endo, M	1992	96	6941	J Phys Chem	HCAPLUS
Fan, S	1999	283	512	Science	HCAPLUS
Geis, M	1995	67	1328	Appl Phys Lett	HCAPLUS
Geis, M	1996	68	2294	Appl Phys Lett	HCAPLUS
Geis, M	1991	38	619	IEEE Trans Electron	HCAPLUS
Gelius, U	1970	2	70	Phys Scr	HCAPLUS
Givargizov, E	1996	74	2030	J Vac Sci Technol B	
Gulyaev, Y	1995	13	435	J Vac Sci Technol B	HCAPLUS
Heilmann, A	1998	10	398	Adv Mater	HCAPLUS
Himpsel, F	1979	20	624	Phys Rev B	HCAPLUS

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Hsu, W                 |1996 |262  |161   |Chem Phys Lett      |HCAPLUS
Iijima, S              |1991 |354  |56    |Nature              |HCAPLUS
Jaskie, J              |1996 |21   |59    |MRS Bull            |HCAPLUS
Jessensky, O           |1998 |72   |1173  |Appl Phys Lett      |HCAPLUS
Journet, C             |1997 |388  |756   |Nature              |HCAPLUS
Kaufman, J             |1989 |39   |13053 |Phys Rev B          |HCAPLUS
Kawaguchi, M           |1997 |9    |615   |Adv Mater           |HCAPLUS
Kusunoki, M            |1997 |71   |2620  |Appl Phys Lett      |HCAPLUS
Li, W                  |1996 |274  |1701  |Science             |HCAPLUS
Marton, D              |1994 |73   |118   |Phys Rev Lett       |HCAPLUS
Okano, K               |1996 |381  |140   |Nature              |HCAPLUS
Pate, B                |1986 |165  |83    |Surf Sci            |HCAPLUS
Ren, Z                 |1998 |282  |1105  |Science             |HCAPLUS
Rinzler, A             |1995 |268  |1550  |Science             |
Shin, I                |1999 |17   |690   |J Vac Sci Technol B |HCAPLUS
Silva, S               |1997 |71   |1477  |Appl Phys Lett      |HCAPLUS
Suenaga, K             |1999 |300  |695   |Chem Phys Lett      |HCAPLUS
Sung, S                |1999 |74   |197   |Appl Phys Lett      |HCAPLUS
Terrones, M            |1999 |11   |655   |Adv Mater           |HCAPLUS
Terrones, M            |1997 |388  |52    |Nature              |HCAPLUS
Tsai, S                |1999 |74   |3462  |Appl Phys Lett      |HCAPLUS
Tsai, S                |1999 |2    |247   |Electrochem Solid-St|HCAPLUS
Tsai, T                |1997 |9    |1154  |Adv Mater           |HCAPLUS
Tsai, T                |1997 |     |      |PhD Thesis of NTHU  |
Vien, D                |1991 |     |      |The Handbook of Infr|
Wagner, C              |1981 |3    |211   |Surf Interface Anal |HCAPLUS
Xu, N                  |1993 |29   |1596  |Electron Lett       |HCAPLUS
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L99  ANSWER 45 OF 49  HCAPLUS  COPYRIGHT 2008 ACS on STN
AN   1999:811170  HCAPLUS  Full-text
DN   132:39343
TI   Synthesis of free-standing and aligned carbon nanotubes
IN   Ren, Zhifeng; Huang, Zhongping; Wang, Jui H.; Wang, Dezhi
PA   The Research Foundation of State University of New York, USA
SO   PCT Int. Appl., 68 pp.
     CODEN: PIXXD2
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     ---------------     ----   --------    --------------------   --------
PI   WO 9965821           A1    19991223    WO 1999-US13648        19990618 <--
         W:  CA, JP, KR, MX
         RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
             PT, SE
     CA 2335449           A1    19991223    CA 1999-2335449        19990618 <--
     EP 1089938           A1    20010411    EP 1999-928735         19990618 <--
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, FI
     JP 2002518280        T     20020625    JP 2000-554654         19990618 <--
     US 2003203139        A1    20031030    US 1999-336126         19990618 <--
     US 6863942           B2    20050308
     MX 2000PA12681       A     20020225    MX 2000-PA12681        20001218 <--
PRAI US 1998-89965P       P     19980619  <--
     US 1998-99708P       P     19980910  <--
     WO 1999-US13648      W     19990618  <--
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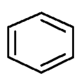
AB One or more highly-oriented, multi-walled carbon nanotubes are grown on an outer surface of a substrate initially disposed with a catalyst film or catalyst nano-dot by plasma enhanced hot filament chemical vapor deposition of a carbon source gas (C2H2) and a catalyst gas (NH3) at 300-3000°C. The carbon

nanotubes have diameter 4-500 nm and length 0.1-50 µm depending on growth conditions. Carbon nanotube d. can exceed to 104 nanotubes/mm2. Plasma intensity, carbon source gas to catalyst gas ratio and their flow rates, catalyst film thickness, and temperature of chemical vapor deposition affect the length, diameter, d., and uniformity of the carbon nanotubes. The carbon nanotubes are useful in electrochem. applications as well as in electron emission, structural composites, material storage, and microelectrode applications.

IT 71-43-2, Benzene, processes 74-85-1, Ethylene, processes 74-86-2, Acetylene, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(synthesis of free-standing and aligned carbon nanotubes)

RN 71-43-2 HCAPLUS
CN Benzene (CA INDEX NAME)



RN 74-85-1 HCAPLUS
CN Ethene (CA INDEX NAME)

$H_2C{=}CH_2$

RN 74-86-2 HCAPLUS
CN Ethyne (CA INDEX NAME)

$HC{\equiv}CH$

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Chang	1999			US 5916642 A	HCAPLUS
DEBE	1998			US 5726524 A	HCAPLUS
Du Pont	1995			WO 009510481 A1	HCAPLUS
Fine Ceramics Center	1998			JP 410265208 A	
Green	1994			US 5346683 A	HCAPLUS
ISIS Innovation	1996			WO 009609246 A1	HCAPLUS
NEC Corp	1995			JP 407061803 A	
Nolan	1998			US 5780101 A	HCAPLUS
Tanaka	1997			US 5648056 A	HCAPLUS

L99 ANSWER 46 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1999:729904 HCAPLUS Full-text
DN 131:331009
TI Polymerized carbon nanobells and their field-emission properties
AU Ma, Xucun; Wang, Enge; Zhou, Wuzong; Jefferson, David A.; Chen, Jun; Deng,

Shaozhi; Xu, Ningsheng; Yuan, Jun
CS Institute of Physics and Centre for Condensed Matter Physics, State Key Laboratory for Surface Physics, Chinese Academy of Science, Beijing, 100080, Peop. Rep. China
SO Applied Physics Letters (1999), 75(20), 3105-3107
CODEN: APPLAB; ISSN: 0003-6951
PB American Institute of Physics
DT Journal
LA English
AB Aligned N-containing C nanofibers consisting of polymerized nanobells have been grown on a large scale using microwave plasma-assisted CVD with a mixture of methane and N. A greater part of the fiber surface consists of open ends of the graphitic sheets. A side-emission mechanism is proposed. A low-threshold field of 1.0 V/μm and a high-emission c.d. of 200 mA/cm2 for an applied field of 5-6 V/μm were achieved, implying that the materials have a high potential for future application as electron field emitters, especially in flat-panel displays.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Bonard, J	1998	81	1441	Phys Rev Lett	HCAPLUS
Casanovas, J	1996	118	8071	J Am Ceram Soc	HCAPLUS
Chen, Y	1998	73	2119	Appl Phys Lett	HCAPLUS
de Heer, W	1995	270	1179	Science	HCAPLUS
Fan, S	1999	283	512	Science	HCAPLUS
Iijima, S	1991	354	56	Nature (London)	HCAPLUS
Krishnan, A	1997	388	451	Nature (London)	HCAPLUS
Kuttel, O	1998	73	2113	Appl Phys Lett	HCAPLUS
Latham, R	1986	19	219	J Phys D	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Novak, B	1993	5	422	Adv Mater	HCAPLUS
Rinzler, A	1995	269	1550	Science	HCAPLUS
Saito, Y	1997	389	554	Nature (London)	HCAPLUS
Sen, R	1998	287	671	Chem Phys Lett	HCAPLUS
Terrones, M	1996	257	576	Chem Phys Lett	HCAPLUS
Wang, Q	1997	70	3308	Appl Phys Lett	HCAPLUS
Wang, Q	1998	72	2912	Appl Phys Lett	HCAPLUS
Wu, K	1998	83	1702	J Appl Phys	HCAPLUS
Xu, N	1986	19	477	J Phys D	HCAPLUS

L99 ANSWER 47 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 1999:712201 HCAPLUS Full-text
DN 132:87219
TI Large arrays of well-aligned carbon nanotubes
AU Ren, Z. F.; Huang, Z. P.; Xu, J. W.; Wang, D. Z.; Wang, J. H.; Calvet, L. E.; Chen, J.; Klemic, J. F.; Reed, M. A.
CS Department of Chemistry, State University of New York at Buffalo, Buffalo, NY, 14260-3000, USA
SO AIP Conference Proceedings (1999), 486(Electronic Properties of Novel Materials--Science and Technology of Molecular Nanostructures), 263-267
CODEN: APCPCS; ISSN: 0094-243X
PB American Institute of Physics
DT Journal
LA English
AB Large arrays of well-aligned carbon nanotubes on glass, silicon, nickel, platinum, etc. were successfully synthesized by plasma enhanced CVD at temps. <500°. Either a uniform layer of nickel made by magnetron sputtering or patterns of nickel dots made by e-beam lithog. and e-beam evaporation or

thermal evaporation was used as the catalyst. Acetylene and ammonia gases were used as the carbon source and dilution gas. Ammonia was also found to act as catalyst . Without ammonia, there was no growth of carbon nanotubes at that low temperature The diams. of the carbon nanotubes range from a few nanometers to a few hundred nanometers depending on the catalytic nickel size. The length is in a range of a few thousand angstroms to a few hundred micrometers depending on the growth time. In the case of uniform nickel layer used for catalyst, the site d. of carbon nanotubes range between 109 to 1012/cm2 depending on the diams. of the nanotubes. Whereas in the case of patterned nickel dots used for catalyst, the site d. can be controlled at any number

IT 74-86-2, Acetylene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of large arrays of well-aligned carbon nanotubes on glass, silicon and metal surfaces sputtered with nickel by acetylene decomposition)

RN 74-86-2 HCAPLUS

CN Ethyne (CA INDEX NAME)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Fan, S	1999	283	512	Science	HCAPLUS
Huang, Z	1998	73	3845	Appl Phys Lett	HCAPLUS
Iijima, S	1991	354	56	Nature	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Ren, Z				(unpublished results	
Ren, Z				Appl Phys Lett (subm	
Ren, Z	1998	282	1105	Science	HCAPLUS

L99 ANSWER 48 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1999:254746 HCAPLUS Full-text

DN 131:22274

TI Continuous production of aligned carbon nanotubes: a step closer to commercial realization

AU Andrews, R.; Jacques, D.; Rao, A. M.; Derbyshire, F.; Qian, D.; Fan, X.; Dickey, E. C.; Chen, J.

CS Center for Applied Energy Research, University of Kentucky, Lexington, KY, 40506, USA

SO Chemical Physics Letters (1999), 303(5,6), 467-474
CODEN: CHPLBC; ISSN: 0009-2614

PB Elsevier Science B.V.

DT Journal

LA English

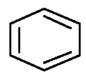
AB High-purity aligned multi-walled carbon nanotubes (MWNTs) were synthesized through the catalytic decomposition of a ferrocene-xylene mixture at .apprx.675°C in a quartz tube reactor and over quartz substrates, with a conversion of .apprx.25% of the total hydrocarbon feedstock. Under the exptl. conditions used, scanning electron microscope images reveal that the MWNT array grows perpendicular to the quartz substrates at an average growth rate of .apprx.25 μm/h. A process of this nature which does not require preformed substrates, and which operates at atmospheric pressure and moderate temps., could be scaled up for continuous or semi-continuous production of MWNTs.

IT 1330-20-7, Xylene, processes

RL: PEP (Physical, engineering or chemical process); PROC (Process)
(carbon source; continuous production of aligned multi-walled carbon nanotubes through the catalytic decomposition of a ferrocene-xylene mixture)

RN 1330-20-7 HCAPLUS

CN Benzene, dimethyl- (CA INDEX NAME)



2 (D1— Me)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	1999	77	31	Chem and Eng News	
Anon	1992			Merck Index	
Anon	1998	281	940	Special section in S	
Baker, R	1978	14	83	Formation of Filamen	
Che, G	1998	393	346	Nature	HCAPLUS
Cheng, H	1998	289	602	Chem Phys Lett	HCAPLUS
Dai, H	1996	260	471	Chem Phys Lett	HCAPLUS
Derbyshire, F	1975	13	111	Carbon	HCAPLUS
Derbyshire, F	1975	13	189	Carbon	HCAPLUS
Endo, M	1997		35	Carbon Nanotubes	HCAPLUS
Endo, M	1998			Proc of the NATO-Adv	
Guo, T	1995	243	49	Chem Phys Lett	HCAPLUS
Kiang, C	1998	81	1869	Phys Rev Lett	HCAPLUS
Kong, J	1998	395	878	Nature	HCAPLUS
Li, W	1996	274	1701	Science	HCAPLUS
Pan, Z	1998	299	97	Chem Phys Lett	
Pan, Z	1998	394	631	Nature	HCAPLUS
Qin, L	1998	72	3437	Appl Phys Lett	HCAPLUS
Rao, C	1998		1525	Chem Commun	HCAPLUS
Ren, Z	1998	282	1105	Science	HCAPLUS
Terrones, M	1997	388	52	Nature	HCAPLUS

L99 ANSWER 49 OF 49 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1994:592735 HCAPLUS Full-text

DN 121:192735

TI Low-energy, ion-enhanced etching of III-V's for nanodevice applications

AU Pearton, S. J.

CS Univ. Florida, Gainesville, FL, 32611, USA

SO Journal of Vacuum Science & Technology, A: Vacuum, Surfaces, and Films (1994), 12(4, Pt. 2), 1966-72
CODEN: JVTAD6; ISSN: 0734-2101

DT Journal

LA English

AB High-d. (≤5 + 1011 cm-3) magnetically enhanced discharges operated at low pressure (1 mtorr) with low addnl. RF-induced d.c. bias (≤-100 V) on the sample enable self-aligned dry etch fabrication of a wide variety of III-V

devices and circuits for light-wave digital and microwave applications. In many cases the ohmic metal contacts are used as the etch masks to minimize parasitic resistances and capacitances resulting from the lateral separation of these contacts. Applications range from formation of shallow mesas (≤400 Å) on high electron mobility transistors to etching of through-wafer vias (.apprx.100 μm). The chemistries employed for these fabrication steps are reviewed, together with examples of processing sequences for heterojunction bipolar transistors and novel microdisk lasers that may form the basis of future electronic and microphotonic circuits.

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IT   74-82-8, Methane, processes
     RL: PEP (Physical, engineering or chemical process); RCT
     (Reactant); PROC (Process); RACT (Reactant or reagent)
        (low-energy and ion-enhanced etching of III-V compds. for
        nanodevice applications)
RN   74-82-8  HCAPLUS
CN   Methane  (CA INDEX NAME)
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CH_4

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     (FILE 'HOME' ENTERED AT 06:55:59 ON 20 FEB 2008)
                SET COST OFF

     FILE 'HCAPLUS' ENTERED AT 06:56:11 ON 20 FEB 2008
L1            1 S US20060133982/PN OR (US2005-534900# OR GB2002-26590)/AP,PRN
                E KINLOCH/AU
L2           44 S E26-E30
                E SINGH/AU
L3            4 S E3
                E SINGH C/AU
L4          700 S E3-E23
L5           63 S E65-E66,E68-E71
                E CHARAN/AU
                E CHARANJ/AU
L6            2 S E4
                E SHAFFER/AU
                E SHAFFER M/AU
L7           31 S E3,E10,E11
L8           62 S E44-E47
                E K OZIOL/AU
                E KOZIOL/AU
L9           33 S E77-E79,E87-E89
                E KRZYSZTOF/AU
L10           1 S E3
                E WINDLE/AU
L11         307 S E4-E10
                E NANO/CT
L12       31199 S E205-E223
L13       39335 S E232-E234
                E E205+ALL
L14       50051 S E2+OLD,NT
                E E14+ALL
L15       94528 S E1+NT
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                E E11+ALL
L16       39414 S E6+OLD
                E E10+ALL
L17      123878 S L12-L16
L18        6597 S B82B/IPC,IC,ICM,ICS
L19      471602 S NANO?/CW,CT,BI
L20      473736 S L17-L19
L21      167400 S L20 AND PY<=2002 NOT P/DT
L22       30161 S L20 AND (PD<=20021114 OR PRD<=20021114 OR AD<=20021114) AND P
L23      197561 S L21,L22
                E VAPOR DEPOSITION/CT
L24        4732 S L23 AND E9-E44
L25          68 S L23 AND E5-E8
                E E5+ALL
L26          70 S L23 AND E1+OLD
                E E1
                E E7+ALL
L27        7043 S L23 AND E9+OLD,NT
L28        7064 S L24-L27
L29        1347 S L23 AND C01B031/IPC,IC,ICM,ICS
L30        1142 S L23 AND C01B031-02/IPC,IC,ICM,ICS
                E CARBON FIBER/CT
L31         193 S L23 AND E64
L32         217 S L23 AND E65
L33          12 S L23 AND E67
L34         284 S L23 AND E15(L)PREP+NT/RL
L35        1709 S L29-L34
L36         291 S L35 AND L28
L37          36 S L36 AND ?ALIGN?
L38           4 S L36 AND ?CURV?
L39          38 S L37,L38
L40          33 S L1-L11 AND L23
L41           4 S L40 AND L28
L42           6 S L40 AND L35
L43           8 S L41,L42
L44           1 S L40 AND L39
L45           8 S L43,L44
L46           4 S L40 AND ?ALIGN?
L47           1 S L40 AND ?CURV?
L48          10 S L45-L47
L49          37 S L39 NOT L48
L50          47 S L48,L49 AND L1-L49
L51          35 S L50 AND ?CATALY?
L52          12 S L50 NOT L51
L53          10 S L52 NOT L1-L11
L54          41 S L50-L53 AND (CVD OR ?CHEM?(L)(?VAPOR? OR ?VAPOUR?)(L)DEPOS? O
L55          47 S L50-L54

     FILE 'REGISTRY' ENTERED AT 07:28:55 ON 20 FEB 2008
L56          21 S 630-08-0 OR 71-43-2 OR 108-88-3 OR 1330-20-7 OR 98-82-8 OR 10

     FILE 'HCAPLUS' ENTERED AT 07:29:11 ON 20 FEB 2008
L57        7884 S L56 AND L23
L58        2225 S L57 AND L56(L)RACT+NT/RL
L59        1940 S L57 AND L56(L)PEP+NT/RL
L60        3794 S L58,L59
L61         183 S L60 AND ALIGN?
L62           6 S L61 AND ?CURV?
L63         106 S L61 AND L28
L64          32 S L61 AND L35
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L65          21 S L63 AND L64
L66          51 S L55,L62,L65
L67         158 S L61,L63,L37 NOT L66
L68         158 S L67 AND ?ALIGN?
L69          43 S L66 AND ?ALIGN?
L70           8 S L66 NOT L69
L71          51 S L69,L70,L66
L72         158 S L68 NOT L71
L73         158 S L72 AND L57
L74          99 S L72 AND L58
L75          74 S L72 AND L59
L76          15 S L74 AND L75
L77          66 S L71,L76
L78         143 S L73-L76 NOT L77
                SEL AN 6 9 10 12 13 26-28 43 44 46 53 58-60 62-64 69 70 85 97 9
L79          32 S L78 AND E1-E64
L80          98 S L77,L79
L81          98 S L80 AND ?NANO?
L82          90 S L81 AND ?ALIGN?
L83           8 S L81 AND ?CURV?
L84           2 S L81 AND ?SPHER?
L85          42 S L81 AND (?PARTICLE? OR ?PARTICULAT?)
L86          10 S L80 AND L1-L11
L87          49 S L83-L86
L88          41 S L87 AND L56
L89          39 S L87 AND (GAS? OR CVD OR ?CHEM?(L)(?VAPOR? OR ?VAPOUR?)(L)DEPO
L90          49 S L86,L88,L89
L91          49 S L80-L89 NOT L90
L92          49 S L90 AND L1-L55,L57-L91
L93          49 S L91 AND L1-L55,L57-L92
L94          41 S L92 AND (CAT/RL OR ?CATAL?)
L95          36 S L93 AND (CAT/RL OR ?CATAL?)
L96          36 S L92 AND (SUBSTRATE OR SUPPORT)
L97          30 S L93 AND (SUBSTRATE OR SUPPORT)
L98          49 S L92,L94,L96
L99          49 S L93,L95,L97

     FILE 'HCAPLUS' ENTERED AT 07:44:54 ON 20 FEB 2008

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